AVIATION

OCTOBER 1, 1923 Issued Weekly PRICE 10 CENTS

ADVANCE NEWS

OF THE RACES

ST. LOUIS ANNOUNCEMENT ISSUE

VOLUME XV

NUMBER 14

SPECIAL FEATURES

ARMY AND NAVY ENTRIES FOR PULITZER RACE
BIOGRAPHIC NOTES OF ARMY AND NAVY ENTRANTS
NEW WRIGHT T3 AVIATION ENGINE
HUFF DALAND ADVANCED TRAINING PLANE

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

LIGHTNESS

THE weight per H.P. of the Wright T-3 engine is better than guaranteed for any other water cooled engine being built. This low weight to power ratio improves speed, climb, ceiling and maneuverability. Greater useful load can be carried for a given wing loading.

Thus this Corporation continues to lead the way in refinements of correct aeronautical engineering practice that have most to do with progress in the aeronautical field.

WRIGHT AERONAUTICAL CORPORATION
Paterson, New Jersey, U. S. A.

"The Identification of Incomparable Service"

The recent introduction of "T" engines in one standardized plane has increased the power by 150 H.P. or 37% over the original 400 H.P. engine. The total weight of the plane only increased 5%. The pounds per H.P. of the entire plane improved 30% with the "T" engine. A great increase in climb, take off, ceiling and high speed naturally followed.

RATINGS

T-2	T-3
525 H.P. heavy duty	575 H.P. heavy duty
600 H.P. high speed	650 H.P. high speed
Weight 1150 lbs.	Weight 1100 lbs.

WRIGHT T MODELS ENGINES

Record—Breakers—ALL

1923

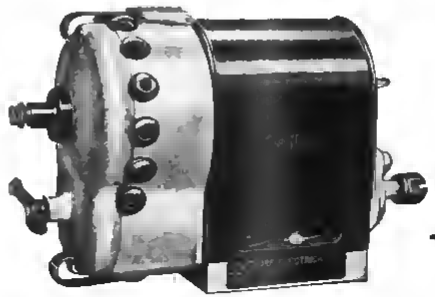
Pulitzer Trophy Race -- won by_____?

Curtiss Marine Trophy Race -- won by_____?

1922

Pulitzer Trophy Race -- won by Lieutenant Maughan, pilot, average 206 miles per hour.

Curtiss Marine Trophy Race -- won by Lieutenant Gorton, pilot, average 112 miles per hour.



The Splitdorf Model SS. Magneto on all Record-breaking planes.

TRADE SPLITDORF MARK ESTABLISHED 1858

OCTOBER 1, 1923

AVIATION

VOL. XV. NO. 14

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AVIATION

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St. Louis as an Airport

LAST year, at the Detroit races, it was the unanimous feeling that the home of the automobile had given expression to the maximum in aeronautical interest. As might have been expected, St. Louis has exceeded the greatest hopes of the airmen, and the public will see a spectacle of aircraft performance that will be unparalleled in the history of aviation. At Detroit, the lighter-than-air development played no part but at St. Louis, weather permitting, the ZR1 will make her salutng dip to the Mississippi Valley. There is no necessity for going further into details. St. Louis has stimulated aeronautical progress in this country in a way that will ever redound to her credit.

The future position of St. Louis in the aeronautical activities of this country has been made secure by the creation of a permanent airdrome. Strategically located, it will always be regarded as an aerial terminus of the first class. The far-seeing and public-spirited men who have made this permanent investment in the future of aviation, will some day be classed in the same group that seized early opportunities to make their cities railway centers.

By far the greatest result of the great effort will be the national interest that will be created. Prominent men representing finance and industry will interpret aviation in the terms of their special needs. Government officials will lay before the country the opportunities for aviation to be of service to the various Departments. The Air Institute will give not only this broad consideration to aeronautics, but the technical and commercial phases of air development will also be given expression.

And the National Aeronautic Association will mark the end of the first year of existence. The deliberations of this annual gathering will have a profound effect on the future of aviation. Decisions must be made that will shape the policy of the organization and these, in no small way, will effect the growth of aeronautical interest all over the country. So, looked at from both the local and national viewpoints, the early days of October will focus all eyes on St. Louis. AVIATION expresses the congratulatory word at this time and will give in forthcoming issues a complete and accurate account of all the happenings of the meet.

Service Ships Versus Racers

AFTER the St. Louis races it will be advisable for the Army and the Navy to take stock of the accumulated information that the last two years has brought out and reach a decision regarding the utilization of the speeds attained. Racing aircraft are an excellent laboratory development and have brought to our airplane designers and constructors the fame of being ahead of the world in aeronautical skill.

A year has elapsed since the records were made in Detroit and except for a few experimental types, no translation of the racing types into service types has been made. Unless this is done the expenditure for the racers will not be utilized to its maximum.

It should be made clear to the public that these racers are not service machines and that the records made do not mean that this speed could be made use of in warfare. Unless this is done, a false feeling of security will be created with the result that when appropriations are needed for service aircraft, they will be refused on the grounds that we have the fastest machines now, so why worry.

The competitive spirit that has been developed between the Army and Navy as a result of these races is a real sign of progress. The Army, last year, freely spent money to develop its record-breaking airplanes. This year the Navy will have the new machines. Barring accidents, the laurels will probably pass from the Army to the Navy, for the designers of last year's ships have put into the 1923 racers the results of much racing experience.

Another fact that should not be lost sight of is that this year the race will be in reality a contest between the Wright and Curtiss designers. The leading contestants bear these two honored names and the race will revive many memories of the early struggles for supremacy in the air.

There is only one feature of the various events that may cause disappointment and that is the almost total lack of new service planes. The last twelve months have produced little new along this line except in naval types of seaplanes and while the experimental aircraft that will be seen will probably be of great interest, it is only reasonable to hope that at another meet the new service equipment will be put in competition.

Airship Operation

ADMIRAL MOFFAT recently said that the airship ZR1 "has a mission in peace which will make her a factor in the commercial expansion of our country. As a means of transportation for passengers and freight, as a means for transoceanic travel and for purpose of exploration, geological survey, and forest patrol, the rigid airship stands in a class alone, and is destined to have a wide sphere of usefulness." He also states that the data that is being kept will be available as a basis of study for commercial airship development. No more important information could be made available as a guide to the public. The airship has had very optimistic friends and their optimism has caused a great deal of money to be invested in this branch of aviation. Official data furnished by the Navy Department as to cost of equipment, operation and depreciation will give just the same criterion as the data furnished by the Air Mail Service.

St. Louis Ready for International Air Races

Ninety-one Entries Received from Army, Navy, Air Mail And Commercial Aviation

Everything is in readiness for what promises to be the greatest International Air Meet held in the United States. The 600 acres which constitute the St. Louis airport at Bridgeton, 6 mi. from the city, has been completely graded, leveled and sowed down with rye. The pilots who have already arrived, state that owing to the low approaches of the field and the levelness of the terrain, this field is one of the best in the United States. The four steel hangars have been completed and floors laid. The water tank, gas tanks, oil tanks have been put in position, the pylons have been constructed on the course. At first the two pylons were put up at the turn in front of the grandstand, in order to insure a wider circle being described by the fliers, but, owing to the fact that the vision of this pylon was somewhat obscured, the second pylon was removed and this hazard eliminated.

The grandstand, seating 53,000 people has been completed; parking space for 25,000 automobiles fenced in; bleachers have been erected for 12,000 people and ample provison to take care of 100,000 people has been made. Judges Stand, Press Stand, Concessions Building have been erected, radio, telephone, and telegraph wires put in. The Photograph Unit from Chanute Field, consisting of 300 men, equipment and searchlights, has arrived on the field. Ninety-one entries have already been made in the Air Races, exclusive of the Mulvihill Model Trophy Race, which has 26 entries. Officers of the rares have been selected and notified, and everything is in readiness for the big event.

Army and Navy Exhibits

The U. S. Army has stripped a few million dollars worth of exhibits covering every phase of aeronautics and aircraft construction. The Navy has shipped a similar exhibit, showing the construction of the ZR1, and many manufacturers have also sent in exhibits of their products. The large tent that is being erected on the field to house the exhibits and a corps of expert men have been sent from McCook Field to see that they are properly provided for.

Definite assurance has been received from Admiral Moffett that unless any unforeseen development arises, the ZR1 will make a non stop flight to St. Louis, and the Barling bomber is also to be there. Lieutenant Maitland and Lieutenant Harris have already visited St. Louis Field to arrange for proper landing of this huge plane. The Marines have already started from Haiti and San Domingo for St. Louis and are expected to arrive in time for the races.

The Saturday and Sunday preceding the races, the aeronautical exposition will be held together with a demonstration of air mail night flying. The field is being illuminated in the same manner as it was at the large night flying fields at the recent tests of the aerial mail. Six air mail entries have been added to the ten originally entered in Event No. 7. This event will prove one of the most interesting of the meet.

Complete arrangements have been made for the Aero Congress and Air Institute which will meet at Hotel Statler. The Aero Congress Banquet will be held on Monday evening, Oct. 1, and the large banquet, at which the trophies and prizes will be awarded, will take place at the Hotel Statler on Wednesday evening, Oct. 3, after the conclusion of the Pulitzer Race.

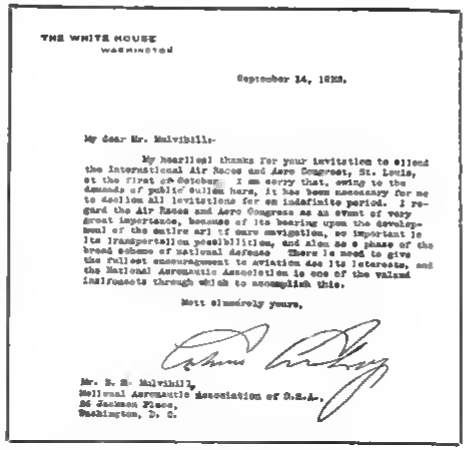
Visiting experts, like Major Hickam and Lieutenant Holcomb sent to St. Louis by the War and Navy Departments to cast a critical eye on the situation, state the Field is shaping up even better than they expected. The races are going to be a wonderfully inspiring series of events. Given a fair break in the weather, they should be a success financially and in every other way.

The huge Sperry searchlight, or aerial beacon, which is to be mounted at the Field, has arrived. This searchlight throws a beam of 1,200,000,000 candle power, which can be seen for a distance of 60 miles. It will be used to illuminate the Field at night, and also for advertising purposes.

J. V. Mages and I. D. Marshall, illuminating engineers, who installed much of the equipment along the route of the experimental night air mail service between Chicago and Cheyenne, are in St. Louis with some interesting plans for illuminating St. Louis Field.

The Grain Club of St. Louis will be out in force Tuesday, Oct. 2, when the race for the Merchants Exchange Trophy is one of the principal events on the program. The Club has made reservations for its 150 members, who will attend in a body, with appropriate banners. They also have requested parking space for twenty-five cars. W. J. Niergarth is President of the Club.

Hugh W. Robertson, assistant to President Howard E. Coffin, of the National Aeronautic Association, who has been at headquarters in charge of arrangements for the Aero Congress and Air Institute, left for Detroit to confer with Mr. Coffin on all details of the Air Meet.



THE WHITE HOUSE
WASHINGTON

September 14, 1923.

My dear Mr. Mulvihill:

My heartiest thanks for your invitation to attend the International Air Races and Aero Congress, St. Louis, at the first of October. I am sorry that, owing to the demands of public duties here, it has been necessary for me to decline all invitations for an indefinite period. I regard the Air Races and Aero Congress as an event of very great importance, because of its bearing upon the development of the entire art of aero navigation, so important in its transportation possibilities, and also as a phase of the broad scheme of national defense. There is need to give the fullest encouragement to aviation and its interests, and the National Aeronautic Association is one of the valued instruments through which to accomplish this.

Most sincerely yours,

Mr. E. H. Mulvihill,
National Aeronautic Association of U.S.A.,
26 Jackson Place,
Washington, D. C.

Meet Well Advertised

The St. Louis Poster Advertising Co. reports the last of 163 large billboards carrying on advertising matter, erected this week. These boards are in strategic locations in 100 towns and cities within 150 miles of St. Louis. There have also been sent out 700 small posters and others are being sent out as rapidly as possible. The Flying Club members have circulated some of this matter and salesmen for several wholesale houses are putting them up in hotels, railroad stations, and other important locations along their routes.

The airplane loaned by the Robertson Aircraft Corp. and placed in Plaza Park, at Channing and Olive, is attracting much attention.

The Speakers' Bureau, under Mr. Swann, began to function actively last week. A corps of eleven speakers is operating in the more important moving picture houses each night. They deliver 4 min. talks, and 100 ft. of film announces the principal events of the Air Meet. Practically all theaters in the city have been covered in this way.

The aerial press agent has made trips to Taylorville, Ill., and Davenport, Iowa, during the past week. He also flew with Peter B. Gibson, to Marion, Ill., to attend the Williamson County Fair.

Mr. Shaw reports final arrangements have been made and all places entered in the various contests have been allotted their hangar space. Two additional entries have been received in the "On-to-St. Louis" race, while assurance is had of two more entries in events Nos. 2 and 4.

A time schedule has been drawn up, also a complete program of events from 10:30 each morning until 4:30 each evening. This schedule has been so arranged that when planes are not actually racing on the course, there will be demonstration of all kinds being given by various planes and pilots. This has been drawn up with great care in order to minimize the danger to the flying personnel and the public, and at the same time to keep things moving at a lively pace.

Judges, scorers, assistant timers, and other officials with the exception of the Medical Committee, have all been assigned to duty for each day of racing, and their names posted on a chart indicating their positions on the Field or on the court.

Lieut. B. R. Holcombe, assistant to Lieut. Comdr. Marc Mitscher who will be in charge of the Navy detail at the races, arrived in St. Louis. After inspecting the Field and flying over the course with Major Scanlon, he said the Field was one of the largest and best located he had ever seen. The first of the Navy fliers were expected to arrive about Sept. 20. Three squads will fly from far distant points, San Diego, Cal., Hawaii, and Pensacola. They will establish a Camp at the Field and have their own mess.

New On-to-St. Louis Race Entries

The following additional entries in the On-to-St. Louis race, which closed Sept. 30, brought their number to twenty. Nearly every section of the country is represented. The list of new entries follows:

Charles L. Powar, Macon, Mo.
Henry James Bowen, Portland, Ore.
Lawrence B. Sperry, Farmingdale, L. I.
Henry A. Barliar, Washington, D. C.
William A. Bunker, Okmulgee, Okla.
R. R. Ferson, M. D., Chicago, Ill.
W. Hunter S. Boyd, Baltimore, Md.
Bertha Horchem, Ransom, Kans.
Richard W. Mackie, Houston, Tex.
Perry Hatton, Wichita, Kans.

The Maschmeyer-Richards Silver Co. has donated a silver trophy, to be known as the Junior Chamber of Commerce Trophy, which will be awarded to the wioner of second place in this race. The Chamber of Commerce trophy, valued at $500.00, will go to the winner of first place.

Closing of County Highways

Special traffic oeders have been issued by the St. Louis County Court for handling the crowds attending flying exhibitions at St. Louis Field at Bridgeton Sept. 29 and 30 and the International Air Races there Oct. 1, 2 and 3. Acting on a petition from the St. Louis Aeronautic Corp., the Court directed that roads be closed or used as one-way thoroughfares on those days as follows:

Closed—Marshall Avenue, from St. Charles to Natural Bridge Road; Edmunson Road from St. Charles to Natural Bridge Road; Fee Fee Road, from Long to Natural Bridge Road; Missouri Bottom Road, from Fee Fee to Bridgeton Station Road, Brown Road, from Graham to Bridgeton Station Road, Scholta Avenue, from Natural Bridge Road to end of Avenue.

One-Way—Westbound traffic only over Natural Bridge Road from Normandy to flying Field from 10 a. m. to 3.30 p. m., two-way traffic after 4 p. m., northbound traffic only over Fee Fee Road from St. Charles to Natural Bridge Road from 10 a. m. to 3.30 p. m., southbound only after 4 p. m.; northbound only over Long Road from Fee Fee to Natural Bridge Road from 10 a. m. to 3.30 p. m.; sonthbound only after 4 p. m., northbound only over Brown Road from Natural Bridge to Graham Road from 10 a. m. to 5 p. m.; northbound only over Graham Road from Brown Road to town of Florissant from 10 a. m. to 5 p. m.; southbound only over Bridgeton Station Road from Florissant to flying field from 10 a. m. to 3.30 p. m.; northbound only after 4 p. m.

Program and Entries for St. Louis Air Meet

In arranging the program for the St. Louis Air Meet an effort has been made to provide places on the program for all types of aircraft. Each of the three days assigned to the meet will have at least two main races, in which plenty of competition will be manifested. The published preliminary program and entry blank booklet contains eight major events with prizes aggregating $13,000.

All races will be flown over a triangular course 50 km. (31.07 miles) around. The course has over a terrain very favorable for racing conditions. In addition, two pylons will be placed at each turn, thus cutting down the intense strain on the pilots when turning the single pylons as in previous meets.

A chronological list and description of the events, together with the list of entries received so far, follow.

"On to St. Louis" Race

St. Louis Chamber of Commerce Trophy

Open from Sept. 20 to 30, 1923, to civilian pilots only. Competing planes must be flown from a point 200 miles or more (air line) from St. Louis Field, Bridgeton, Mo.

In view of the wide variety of planes whose owners have signified their intention of entering this event, the Contest Committee, after thorough deliberation of all means by which a contest may be judged fairly, will base its findings and award prizes according to the following four rules:

AVERAGE SPEED BASED ON TOTAL ELAPSED

Average speed will be determined by dividing the air distance between points of departure and St. Louis Field, Bridgeton by total elapsed time. No points will be awarded for average speeds of less than 50 mi./hr.

The maximum number of points to be awaeded on average speed per hour is 100. A plane making the flight at an average speed of 150 mi./hr. will be awarded 100 points, and for each mile per hour less than 150 mi./hr., one point less will be awarded.

DISTANCE COVERED

In order that pilots flying from distances greater than 500 miles may not be penalized by having to land and take on extra fuel with the resultant reduction in average speed, based on elapsed time, the following points will be awarded on total air line distance covered:

Planes starting at a point 500 miles from St. Louis Field will be awaeded no points.

Planes will be awarded 10 points for each additional 100 miles (above the 000 miles specified). If the distance covered by a contestant falls between two of the recogeized (100 mile) distances, he shall be allotted the distance nearest to which his actual flying distance falls.

PASSENGERS CARRIED

Planes will be awaeded 10 points for each passenger carried, the maximum number of points to be awarded being 100 (10 passengers).

ENGINE HORSEPOWER

A maximum of 200 points will be awarded to the plane completing the flight propelled by an engine of 30 hp. or less. For every 10 additional horsepower of the power plant 5 points less than the maximum will be awarded, the minimum (for 400 hp.) being 15 points.

The horsepower will be that obtained from the McCook Field report for that make of engine at its normal rpm. regardless of the make or size of propeller, carburetor or other

ENTRIES FOR FLYING CLUB OF ST. LOUIS TROPHY

Pilot	Plane	No	Engine	Hp.	Entrant
Robert P Hewitt	Farman "Sport"	1	Anzani	60	Ludington Ex. Co
Charles S Jones	Curtiss Oriole	2	Curtiss OX5	90	Curtiss Ex Co.
Lawrence B Sperry	Messenger	14	Lawrance L4	60	Lawrence B Sperry
Edmond T Allen	B A S 4 place	27	Le Rhone	60	Henry A. Berliner
Maj. Wm B Robertson or Frank H. Robertson	Special plane	28	Curtiss OX5	60	Robertson Aircraft Corp
Walter E Lees	Hartzell FC1	59	Curtiss OX5	90	Johnson AP. & Sup Co.
Perry G Hutton	Laird Swallow	61	Curtiss OX5	90	Sterling Oil & Ref. Co.
John K. La Grone	Rogers-Day	66	Curtiss OX5	90	John K. La Grone

accessories used. No claim may be made against poor fuel, loss of r p m , etc.

This contest is open to any make or type of aircraft. The flight may start at any time after Sept. 20, 1923, but must be completed on or before midnight, Sunday, Sept. 30, 1923

Prizes will be awarded on the total number of points received by contestants. First prize will be $500 00 in cash and a silver loving cup Second prize will be $250 00 in cash. Third prize will be $150 00 in cash. Fourth prize will be $100 00 in cash. In case of a tie the winner will be determined by lot The decision of the Contest Committee of the Flying Club of St. Louis is final.

Flying Club of St. Louis Trophy

Monday, Oct 1, 1923

This Trophy, donated by the Flying Club of St. Louis, shall be competed for by airplanes of 00 hp. or less, and shall become the permanent possession of the entrant of the winning airplane

CONDITIONS OF CONTEST:

(a) In order to stimulate interest among civilian pilots, Army and Navy pilots will not compete in this race

(b) Engine must be 00 hp or less. (Horsepower as given by the Engineering Divisions of the U S Air Service at McCook Field will be taken as standard.)

(c) All airplanes must carry a total load of 340 lb , evenly distributed in two cockpits, this load to consist of pilot and one passenger, with sufficient ballast, if necessary, to bring their weight up to the required amount. It is requested by the Contest Committee that all contestants carry ballast in lieu of passenger, in order to eliminate hazard in this respect Under no consideration may open cockpits be covered.

(d) General condition and design of plane to be such that in the opinion of the Contest Committee it is safe and not a menace to other contestants or spectators. The Contest Committee reserves the right to refuse to admit any airplane which does not comply with these requirements.

(e) At the time of entry the entrant must supply the Contest Committee with a statement, giving the bore and stroke of the engine to be used in the race, this statement to be properly executed before a notary public. The Contest Committee reserves the right to check the measurements of any engine entered and to demand the removal of a cylinder for this purpose The decision of the Contest Committee will be final.

DISTANCE

150 kilometers (93 21 miles), three times around a closed course of 50 kilometers (31 07 miles), starting at St. Louis Field, thence north to the first turning pylon, thence southwest to the second turning pylon, and return to St. Louis Field

NUMBER OF CONTESTANTS

Minimum number Four.
Maximum number. Sixty

CASH PRIZES

First prize $500, second prize $300, third prize $200

Liberty Engine Builders' Trophy

Monday, Oct 1, 1923

This Trophy, donated by the builders of the Liberty engine, shall be perpetual and competed for annually by observation type (two-place) airplanes or flying boats

CONDITIONS OF CONTEST:

(a) Factor of safety 6 as loaded for start of race

(b) Air speed greater than 90 m p.h

(c) Carrying the following "contest load" and, in addition, crew 340 lb. "Contest loads" shall be determined from the following formula using as a basis the cubic inch displacement for the 400 hp. Liberty engine.

$$\frac{400}{1649\cdot34} \times \text{cubic inch displacement of motor used} \times .85 = \text{Contest Load.}$$

Note Fire extinguishers and parachutes may be included in the "contest load", however, fixed instruments, gas, oil and water for the course are excluded. Bomb racks, guns and mounts may be removed At the time of entry the entrant must supply the Contest Committee with a statement giving the bore and stroke of the engine to be used in the race, this statement to be properly executed before a notary public. The Contest Committee reserves the right to check the measurements of any engine entered and to demand the removal of a cylinder for this purpose. In case there is a question of the cubic inch displacement of the engine, the Contest Committee

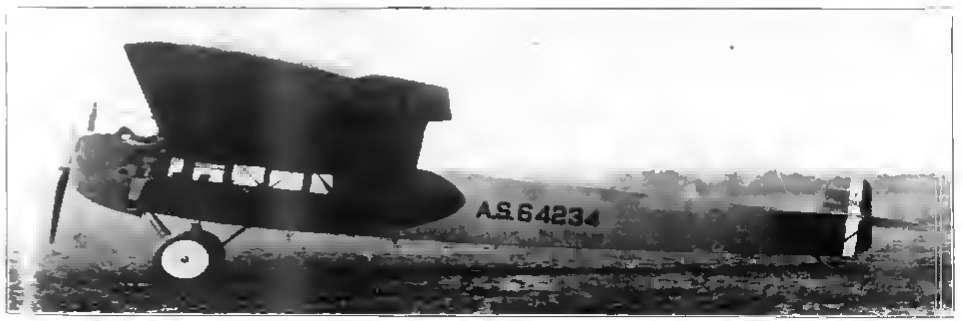
ENTRIES FOR LIBERTY ENGINE BUILDERS' TROPHY

Pilot	Plane	No.	Motor	Hp	Entrant
Ens D C Allen, U.S.N	Curtiss 18T	3	Curtiss CD12	400	Bureau of Aeronautics
2nd Lt. G B Hall, U.S.M.C.	Vought UO1	4	Lawrance	210	Bureau of Aeronautics
Lt S M Connell, A.S.	Lepere	30	Liberty	400	U. S. Army Air Service
Lt Horace N Hansen, A S	CO4	31	Liberty	400	U. S. Army Air Service
Lt C McMullen, A S	CO4	32	Liberty	400	U. S Army Air Service
Lt. L H. Smith, A S	CO5	33	Liberty	400	U S Army Air Service
Lt V. J. Meloy, A S	XB1A	34	Wright	300	U S Army Air Service
Lt. W T. Larsen, A S.	XB1A	35	Wright	300	U. S. Army Air Service
Lt H K Ramey, A S	DH4L	36	Liberty	400	U. S. Army Air Service
Lt. D M Ontenlt, O R C.	DH4R	37	Liberty	400	U. S Army Air Service
Lt W H Bleakley, A S.	DH4B	38	Liberty	400	U. S. Army Air Service
Lt J J O'Connell, A S	DH4B	39	Liberty	400	U S Army Air Service
Maj. Roy S Brown, A.S.	DH4B	40	Liberty	400	U S Army Air Service
Capt Robt Oldys, A S	Packard-Fokker D7*	62	Packard 1A 1237	300	U. S Army Air Service
Lt W. H Brookley, A S	Curtiss*	63	Curtiss D12	460	U. S Army Air Service

*Two seater observation plane.

Farman "Spart" (50-60 hp. Anzani), entered in the Flying Club of St. Louis race

Bellanca CF cabin plane (90 hp Anzani) entered in the Aviation Country Club of Detroit race



U. S. Army-Fokker T2 (400 hp. Liberty), entered in the Merchants Exchange Trophy race

ENTRIES FOR COUNTRY CLUB OF DETROIT TROPHY

Pilot	Plane	No.	Engine	Hp.	Entrant
Charles Sherman Jones	Curtiss Oriole	2	Curtiss OX5	98	Curtiss Ex. Co
George B Post	Huff Daland "Petrel" 4	11	Wright E	100	Huff, Daland Aero Corp
Harry G Smith	Bellanca CF	12	Anzani	90	Bellanca Airplane Co
John L. Burns	Lepère 3-seater	25	Hispano-Suiza	210	Burns Flyers
Harold Harris	Huff, Daland TW5C	26	Wright "E"	190	Huff, Daland Aero Corp
Edmund T Allen	4-seater mono	27	Le Rhone	80	Henry A. Berliner
Frank H Robertson	Special Standard J1	29	Hispano-Suiza	150	Robertson Aircraft Corp.
Maj Wm. B Robertson	Raco (Orenco) 3-seater	60	Hispano-Suiza "A"	150	Robertson Aircraft Corp
Perry Hatton	Laird Swallow	61	Curtiss OX5	98	Sterling Oil & Ref Co.

reserves the right to use the cylinder displacement figures given for such engine by the Engineering Division, McCook Field The decision of the Contest Committee will be final

DISTANCE:

300 kilometers (186 42 miles)—six times around a closed course of 50 kilometers (31 07 miles), starting at St Louis Field and north to first pylon, then southwest to second pylon, then east, passing over captive ballon located approximately 5 miles east at about 1500 ft altitude, and continuing to St Louis Field.

NUMBER OF CONTESTANTS

Minimum number Four
Maximum number Forty.

CASH PRIZES

First prize $800, second prize $500, third prize $200

Aviation Country Club of Detroit Trophy

Tuesday, Oct 2 1923

This Trophy, donated by the Aviation Country Club of Detroit, shall be perpetual, and competed for annually by airplanes of the light commercial class.

CONDITIONS OF CONTEST

(a) In order to stimulate interest among civilian pilots, Army and Navy pilots will not compete in this race

(b) Average air speed greater than 80 m.p.h in race

(c) Factor of safety of wing cellule as loaded for start of race 4 low incidence condition, 6 high incidence condition

(d) Engine or engines must total 200 hp or less, with a total piston displacement not to exceed 750 cu in Horsepower will be taken from the normal horsepower rating as given in the official McCook Field report for the engines used

(e) All airplanes must be constructed to seat comfortably a pilot and at least two passengers. It is requested by the Contest Committee that all contestants carry ballast in lieu of passengers in order to eliminate hazard in this respect. Under no consideration may obviously open cockpits be covered during the race This does not eliminate "cabin" type fuselages which allow the passengers to be comfortably seated in the cabin during the flight

DISTANCE

250 kilometers (155.34 miles)—five times around a closed course of 50 kilometers (31 07 miles), starting at St. Louis Field and thence north to first pylon, thence southwest to second pylon, thence east passing over captive balloon located approximately 5 miles east at about 1500 ft altitude continuing east to St. Louis Field

(A) WINNER (Light Commercial Speed)

Of first place shall be the pilot who has completed the full course in the shortest elapsed time, and of second place the second best time, etc., provided the pilot is not disqualified and the prize money will be paid to the entrants of the winning airplanes

(B) WINNER (Light Commercial Efficiency)

Of first place shall be the pilot who has completed the full course with the highest figure of merit based on formula, and of second place the second highest, etc., provided the pilot is not disqualified, and the prize money will be paid to the entrants of the winning airplanes. The winner of this race shall be the pilot of the airplane who receives the highest figure of merit based on the following formula:

$\frac{W}{H.P} \times M.P.H$ = Figure of merit, where W = weight of load passengers, and $H.P$ = horsepower credited contestant, and $M.P.H$ = average speed of completing race in miles per hours (must not be less than 80) The horsepower credited to the contestant will be determined as indicated in Par d, under "Conditions of Contest." The contest load shall consist of passengers, or 170 lb ballast in lieu of each passenger

NUMBER OF CONTESTANTS

Minimum number Six
Maximum number Forty

CASH PRIZES:

Speed—First prize $500, second prize $300, third prize $200

Efficiency—First prize $500, second prize $300, third prize $200

Merchants Exchange of St. Louis Trophy

Tuesday, Oct. 2, 1923

This trophy, donated by the Merchants Exchange of St. Louis, shall be competed for by large capacity airplanes capable of carrying a pay load of 2000 lb or over, and shall become the permanent possession of the entrant of the winning airplane

CONDITIONS OF CONTEST

(a) Factor of safety of wing cellule as loaded for start of race 3 low incidence condition, 4 high incidence condition.

(b) Air speed greater than 85 m.p.h

(c) Capable of carrying a pay load of 2,000 lb or over, at a minimum climb of 150 ft. the first minute (The Contest Committee may require the contestant to demonstrate by actual flight that his plane can meet these conditions.)

(d) All airplanes will carry the following "contest load" and in addition crew 340 lb., also gas, oil and water sufficient for the race The contest load shall be determined from the following formula, using as a basis the cubic inch displacement for the 400 hp Liberty engine

$\frac{400}{1640.34} \times$ cubic inch displacement of engine or engines used $\times 2 =$ "contest load"

DISTANCE:

300 kilometers (186 42 miles)—six times around a closed course of 50 kilometers (31 07 miles), starting at St Louis Field and north to first pylon, then southwest to second pylon, then east passing over captive balloon located approximately 5 miles east at about 1500 ft. altitude, continuing east to St. Louis Field.

NUMBER OF CONTESTANTS

Minimum number Four
Maximum number Forty.

CASH PRIZES.

First prize $1,000, second prize $700, third prize $300

Mulvihill Model Trophy

Tuesday, Oct 2, 1923

This Trophy, donated by B V Mulvihill, vice-president of the National Aeronautic Association, shall be perpetual and competed for annually by members of the Junior Flying League of the National Aeronautic Association.

CONDITIONS OF CONTEST

No restrictions on the design of the model except that they shall have a wing span of not to exceed 40 in All models must be hand launched and the only motive power will be that derived from the use of rubber strands.

A contestant may be allowed three trials and will be accredited with the greatest time made in any one of the three

NUMBER OF ENTRIES

No contestant will be allowed to enter more than three models.

WINNER

The winner of first place shall be the owner and builder of the model which has remained in flight for the longest elapsed time, and of second place the second longest elapsed time, etc, providing the contestant has not been disqualified

QUALIFICATIONS

No contestant may take part in the contest for this Trophy unless he is a member of the Junior Flying League of the National Aeronautic Association, and in good standing He must also be the owner and builder of the model submitted; however, the design for the model may be obtained from other sources than his own He shall be the builder of the entire model with the following exceptions Propellers, motor bearings and propeller shaft, also such other small metal fittings as may be used in the construction of the model may be purchased from outside sources.

"Detroit News" Air Mail Trophy

Wednesday, Oct 3, 1923

The Detroit News Air Mail Trophy, donated by the *Detroit News* to the National Aeronautic Association, shall be competed for annually by airplanes or flying boats

CONDITIONS OF CONTEST

(a) Factor of safety of wing cellule as loaded for start of race 4 tow incidence condition, 6 high incidence condition.

(b) Air speed greater than 90 m.p.h

(c) Capable of carrying pay load of 800 lb or over at a minimum climb of 500 ft. the first minute The Contest Committee reserves the right to require the contestant to demonstrate by actual flight test that his plane can meet these requirements. This load will not be carried during the race

(d) "Contest load" All airplanes during the race will carry pilot and gas, oil and water sufficient for the race.

(e) Only pilots of the U S Air Mail Service are eligible for this race and must use regulation plane built for Air Mail Service and equipped with single Liberty engine

The Contest Committee reserves the right to refuse to admit any airplane which does not comply with the requirements.

DISTANCE:

300 kilometers (186 42 miles)—six times around a closed course of 50 kilometers (31 07 miles) starting at St. Louis Field and north to first pylon, then southwest to second pylon, returning east to St. Louis Field.

WINNER

Of first place shall be the pilot who has completed the full course in the shortest elapsed time, and of second place the second best time, etc, provided the pilot is not disqualified. The Detroit News Air Mail Trophy will be awarded to the Aero Club or Chapter of the N.A.A represented by the winning pilot and the prize money paid to the entrants of the winning airplanes

NUMBER OF CONTESTANTS

Minimum number Four
Maximum number Forty

CASH PRIZES

First prize $800, second prize $500, third prize $200

ENTRIES FOR MERCHANTS' EXCHANGE OF ST LOUIS TROPHY

Pilot	Plane	No	Engine	Hp.	Entrants
Lt. M A. Schur, U S N	DT4	5	Wright T2	520	Bureau of Aeronautics
Btan. E E Rebar, U S N.	DT4	6	Wright T2	520	Bureau of Aeronautics
Lt Robert J Brown, A.S	DT2	41	Liberty	400	U S Army Air Service
Lt M S Fairchild, A S.	Breguet 14B2	42	Standard Liberty	400	U. S Army Air Service
Lt H G Crocker, A.S.	Army-Fokker T2	43	Liberty	400	U S Army Air Service
Lt H L George, A S	Martin Bomber	44	2 Liberty	400 ea.	U S Army Air Service
Lt L. P Arnold, A S	Martin Bomber	45	2 Liberty	400 ea.	U S Army Air Service
Lt L. Wade, A S	Martin Bomber	46	2 Liberty	400 ea.	U S Army Air Service
Capt E C Black, A S	Martin Bomber	47	2 Liberty	400 ea.	U S Army Air Service
1st Lt. W S Halleberg, A S	Martin Bomber	58	2 Liberty	400 ea.	U S Navy

ENTRIES FOR MULVIHILL MODEL TROPHY

Pilot	Plane	No.	Pilot	Plane	No.
Walter L Brock	Model	1	G Carroll Stribling	Model	19
Paul Shifler Smith	Model	2	Bud Gruenewald	Model	20
E. J. Lange	Model	3	Allyn Smith	Model	21
Bertram Pond	3 Models	4-5-6	Christy C Magrath, Jr.	Model	22
Joseph J. Lucas	Model	7	James Jordan	Model	23
Eugene J. Docherty	3 Models	8-9-10	Paul C. H. Miles	Model	24
Robert Jaros	Model	11	Wm. Sowles	Model	25
Augustin Jones	Model	12	Charles Bragg	Model	26
John H Caldwell	Model	14	Charles F Reiss	Model	27
Carl Rosmanith	Model	15	Peter Nelsen	Model	28
Claud W. Saunders	Model	16	Paul Anthony	Model	29
Jerry Weidknecht	Model	17	Paul Oldendorph	Model	30
Lawrence Gerat	Model	18	G E Merrick	Model	31
			William Schweitzer	Model	32

ENTRIES FOR "DETROIT NEWS" AIR MAIL TROPHY

Pilot	No.	Pilot	No.
Ernest M. Allison, A.M.S.	15	Randolph G. Page, A.M.S.	23
L. H Garrison, A.M.S	16	E. F. White, A.M.S.	24
Wm. C. Hopson, A.M.S	17	B. H. Winslow, A.M.S.	66
Jason H Knight, A.M.S	18	W. F Blanchfield, A.M.S	67
Harold T Lewis, A.M.S.	19	R. H Ellis, A.M.S	68
Jason F Moore, A.M.S	20	W. D Williams, A.M.S	69
Dean C Smith, A.M.S.	21	Paul F Collins, A.M.S	70
Frank R. Yager, A.M.S	22	Wesley L. Smith, A.M.S	71

Pulitzer Trophy

Wednesday, Oct. 3, 1923

The Pulitzer Trophy, donated by Ralph Pulitzer, Joseph Pulitzer, Jr., and Herbert Pulitzer to the National Aeronautic Association, shall be perpetual and competed for annually by airplanes, and shall be awarded each year to the Aero Club or Chapter of the N.A.A. represented by the pilot of the winning airplane, and this body shall be entitled to the possession of the trophy until one month prior to the next succeeding contest, at which time the trophy shall be returned to the National Aeronautic Association. The Contest Committee of the National Aeronautic Association, with the consent of the Board of Governors, has the privilege of conducting each annual contest for the Pulitzer Trophy or of assigning this privilege, under sanction, to any other Club or organization.

Gold, silver and bronze plaques will be given by the donors to the pilot winning first, second and third places in every contest for the Pulitzer Trophy.

CONDITIONS OF CONTEST

(a) Factor of safety 7½ as loaded for start of race.

(b) Air speed greater than 175 mi./hr. as loaded for start of race.

(c) Stalling speed not to exceed 75 mi./hr. in still air. This can be calculated theoretically, and it is a condition of this contest that each entrant file with the Contest Committe not later than Sept. 1, the following data:

(1) Weight of machine ready to fly (with pilot at 180 lb. and full fuel load for the Pulitzer route)

(2) Total lifting surface of wings

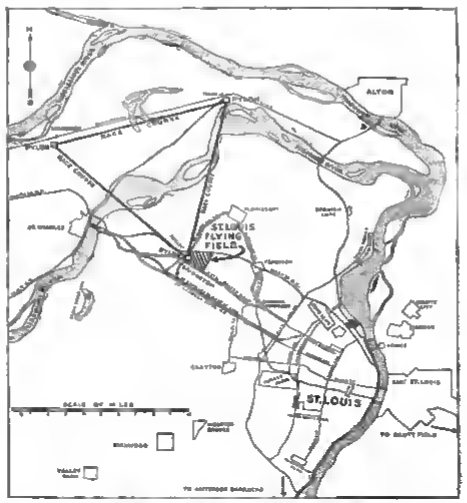
(3) Profile of section used

(4) Characteristic curve showing maximum K_y derived from rectangular wing model of the section used, size 3 in. by 18 in., approximately. Tested at a speed of 40 mi./hr. in a wind tunnel not less than 4 ft. diameter. The test to be made in a tunnel of recognized standing.

The Contest Committee reserves the right to weigh any plans as a check against the figures submitted, also to measure and otherwise check the profile of the wing used.

(d) Visibility and maneuverability (land and air) which, in opinion of Contest Committee, is not a menace to the other contestants or spectators.

All planes in this race must leave the ground under own power only, must not discard any part of its equipment in flight and must have proper landing equipment attached at all times.



Sketch map showing location of Bridgeton Field, St. Louis, and 50 kilometer course for National Air Races, Oct. 1 - 3, 1923

Col. Albert T. Perkins, Chairman, Grounds Committee, St. Louis Aeronautic Corp.

W. Frank Carter, General Chairman, St. Louis Air Board

Joseph Pulitzer, Member, Executive Committee, St. Louis Air Board and one of the donors of the Pulitzer Trophy.

ENTRIES FOR JOHN L. MITCHELL TROPHY

Pilot	*Plane*		*Engine*	*Hp.*	*Entrant*
Lt. T. W. Blackburn, A.S.	Thomas-Morse MB3	53	Wright "H"	300	U. S. Army Air Service
Lt. T. K. Matthews, A.S.	Thomas-Morse MB3	54	Wright "H"	300	U. S. Army Air Service
Lt. G. P. Tourtellet, A.S.	Thomas-Morse MB3	55	Wright "H"	300	U. S. Army Air Service
Capt. V. B. Dixon, A.S.	Thomas-Morse MB3	56	Wright "H"	300	U. S. Army Air Service
Lt. J. T. Johnson, A.S.	Thomas-Morse MB3	57	Wright "H"	300	U. S. Army Air Service
Capt. Burt E. Skeel, A.S.	Thomas-Morse MB3	65	Wright "H"	300	U. S. Army Air Service

DISTANCE:

200 kilometers (124.27 miles), four times around a closed course of 50 kilometers (31.07 miles), starting at St. Louis Field, thence north to first pylon, thence southwest to second pylon and east to St. Louis Field.

WINNER:

Of first place shall be the pilot who has completed the full course in the shortest elapsed time, and of second place the second best time, etc., provided the pilot is not disqualified. The Pulitzer Trophy will be awaeded to the Aero Club or Chapter of the N.A.A. represented by the winning pilot and the prize money paid to the entrants of the winning airplanes.

NUMBER OF CONTESTANTS:

Minimum number: Four.

Maximum number: Forty.

CASH PRIZES:

First prize $2,000, second prize $1,500, third prize $500.

The entries received for the Pulitzer Trophy race will be found under the special article dealing with the constructional features of the Army and Navy entries for this event.

John L. Mitchell Trophy

Wednesday, Oct. 3, 1923

This Trophy, donated by Brig. Gen. William Mitchell, Assistant Chief of Air Service, in memory of his brother John L. Mitchell, who was killed in action over the lines, will be competed for by pilots of the First Pursuit Group, Air Service, flying standard pursuit planes.

This event is a pure speed race, and will be competed over 200 km. distance, four times around the closed course of 50 km. starting from St. Louis Air Field.

Vauville Gliding Meet

The glider and light plane meet which was held from Aug. 5 to 26 last at Vauville, near Cherbourg, France, did not produce any sensational performances, although some good duration and distance flights were made.

Out of 56 entries received by the organizers of the meet, of which number twenty were low-powered planes, only about a dozen machines actually showed up at Vauville. Of those present, no performance worth noting was put up by the freak machines which were so numerous at last year's Combegrasse meet, a good many of which again appeared this year with slight modifications. By far the best performances were made by the two gliders which had revealed themselves last year, namely, the Dewoitine and the Peyret, but it is worth noting that new machines, the Belgian Poncelet glider and the French Bardin glider, put up a very creditable show in distance, duration and altitude. It was fortunate that the organizers had assigned three weeks' time to this meet, as for about a fortnight the wind consistently blew from the wrong direction, that is, from the east, which made gliding experiments in ascending air currents practically impossible. The gliding terrain was situated on a cliff between Vauville and Biville, about 80 to 120 m. over sea level, with gentle slopes descending from it inland. At the foot of the cliff, there was a fairly wide beach on which gliders could and did make landings. However, as this cliff was in a general north and south direction and faced west, only west winds could be made use of for extended gliding flights.

A fatal accident unfortunately saddened the meet, when, on Aug. 15, the new Thomas monoplane glider crashed to the ground with a broken wing, killing its pilot, M. Hemmerdinger.

Of the twenty light planes entered, only the Peyret and two Dewoitines appeared on the scene, and these little ships made numerous successful flights for the entertainment of those present when gliding experiments were impossible. An incident should be noted in connection with one of the Dewoitine light planes, for it showed once more what struck several observers during Barbot's flights in this country. On one occasion, when there was a fair ascending current blowing up the cliff, a Dewoitine light plane made four attempts to land before it succeeded in doing so, for as soon as a pilot would flatten out, the very lightly loaded high-lift wing would shoot him up into the air again. This drawback of the present type of light plane is a very serious one for getting into small fields.

The Poncelet machine, which was entered as a light plane, had its engine removed at the last moment, and entered the competition as a glider, performing very creditably, as may be seen from the performance tables which follow.

Duration—1st, Barbot (Dewoitine), 6 hr. 4 min. 2 sec.; 2nd, Maneyrol (Peyret), 4 hr. 22 min. 13 sec.; 3rd, Simonnet (Poncelet), 4 hr. 6 min. 20 sec.; 4th, Thoret (Bardin), 2 hr. 58 min. 35 sec.

Distance—1st, Thoret, 8,250 km.; 2nd Simonnet, 5,100 km.; 3ed, Descamps (Dewoitine), 2,400 km.

Altitude—1st, Simonnet, 295 m.; 2nd, Descamps, 267 m.; 3rd, Thoret, 151 m.; 4th, Maneyrol, 141 m.

It is interesting to compare these figures with the existing world's records, which are as follows: Duration, Maneyrol, 8 hr. 5 min. (Jan. 29, 1923); distance, Maneyrol, 7,750 km. (Feb. 26, 1923); altitude, Descamps, 540 m. (Feb. 7, 1923).

Inasmuch as light planes are aerodynamically in the same class of aircraft as ordinary airplanes, one cannot speak of world's records in respect to the little ships. The following performances, however, made at the Vauville meet are worth recording. A 20 km. course was covered in 22 min. 28 sec. by Maneyrol on a Peyret glider fitted with a 675 cu. cm. engine; Descamps covered the same circuit in 22 min. 35 sec. with a 765 cu. cm. engine; while Barbot took 29 min. 30 sec. with a 1125 cu. cm. engine. The conclusion to be drawn is that the Peyret light plane is by far the more efficient machine. This little ship incidentally demonstrated that it has a speed range of from 21 to 56 mi./hr., and it also made the best altitude flight at Vauville, reaching 3830 m., which is a world's record of sorts, while Barbot reached a height of 2450 m.

The Peyret light plane was equipped with a 12 hp. Sergant engine. It has a span of 10 m., an overall length of 7 m. and a wing area of 50 m.

Founder of Underwriters' Laboratories Dies

William Henry Merrill, founder President of Underwriters' Laboratories, Inc., died Monday, Sept. 17 at the Presbyterian Hospital of Chicago.

Born in Warsaw, New York, Dec. 29, 1868, Mr. Merrill graduated from the Massachusetts Institute of Technology in 1889 and shortly thereafter reported in Chicago for service in fire protection and prevention, to which cause his very active career of a third of a century was exclusively devoted. In 1898, he organized the work now known the world over as Underwriters' Laboratories and has since served as its principal executive. The institution both as to its plant and its equipment and its influence in the building and manufacturing industries becomes an enduring monument to his talent as an organizer and executive and as a crusader in a public work of major importance.

Army and Navy Entries in the Pulitzer Trophy Race

Thin Wing Biplanes in Great Majority—Most Heavily Powered Racers in the World to Compete

This year's Pulitzer Trophy Race, which will be held Oct. 3 at St Louis, will be particularly interesting on several counts To begin with, the two Navy-Wright Fighters, built by the Wright Aeronautical Corp for entry by the Bureau of Aeronautics, Navy Department, in the Pulitzer race are with their 700 hp Wright T3 engines the highest powered airplanes in the world, with the possible exception of the Fiat Racer, about which little definite information is available.

Navy Wright Fighter powered with a 750 hp Wright model T3 engine, one of the four Navy entries in the Pulitzer Race In trials at Mitchel Field this ship covered a 1-kilometer course at an air speed of 238 mi./hr.

In their speed tests at Mitchel Field, these ships gave a very impressive demonstration of high speed and maneuverability These powerful planes may, therefore, be expected to be strong contenders in the Pulitzer race

The two Navy-Curtiss R2C1 Racers, which with the two Navy-Wright Fighters complete the Navy team in the Pulitzer race, are likewise machines of unusual interest In their design, based on several years' racing experience, the Curtiss Aeroplane & Motor Co has combined great power, small size, and streamlining in an astonishingly effective manner Fitted with the new Curtiss racing engine, the D12 Special, which develops 507 hp. at 2300 r.p.m., these ships, despite their lower horsepower, will be very dangerous competitors for the Navy-Wright Fighters.

The Army Air Service will be represented in the Pulitzer Trophy Race by three entries, two of which will be last year's Army-Curtiss Racers, while the third will be a Verville-Sperry Racer Two of these ships, one of the Army-Curtiss Racers and the Verville-Sperry, have been equipped with the new Curtiss D12 Special engine, while the other Army-Curtiss Racer will have last year's 465 hp Curtiss DI2 engine It will be interesting to compare the performances of the Army and Navy Curtiss Racers, for they will afford valuable indications as to how more speed can be obtained from better streamlining on one hand and from added horsepower on the other

Following are the principal characteristics of the Army and Navy entries in the Pulitzer Trophy Race

The Navy-Wright Fighters

The Navy-Wright Fighter was produced by the Wright Aeronautical Corp. of Paterson, N. J Its tests at Mitchel Field indicated clearly that it will be one of the foremost contestants for the honor of winning the Pulitzer Trophy Race.

It is a single-seater tractor biplane, equipped with a Wright high compression Model "T3" engine of 700 hp The overall length is 21 ft. 4 in., the span 22 ft. 6 in. and the overall height 7 ft 11½ in. The gap is 4 ft. 4 in., and there is no stagger dihedral or sweepback.

The wings are set at an angle of incidence of 0 deg and are built up of spruce beams covered with two-ply spruce planking There are two lower wing panels and a single upper panel The outboard struts are of I form and built up of spruce, while the center strut is a single vertical rigid framework, constructed of four welded steel tubes covered with fairing The ends of the streamline bracing are carried by ingenious steel fittings, which permit the wires to pass through the wings, so that their ends are readily accessible for adjustment although entirely out of the air-flow.

The horizontal stabilizer and vertical fin are built up of spruce webs, with mahogany ply covering, while the elevator and rudder have steel frames with fabric covering. The horizontal stabilizer is adjustable on the ground.

The fuselage is of the monocoque type, with a two-ply spruce shell and four spruce longerons, together with ply-

Three-quarter rear view of the Navy-Wright Fighter entered in the Pulitzer Trophy Race

wood bulkheads sufficiently close to insure that the shell maintains its shape under the most severe conditions.

The engine mounting is of the same construction below the engine bearers as the fuselage, above the bearers there is a small diagonal steel tubular strut on each side running down from the top of the fire wall.

The landing gear is of steel with wood fairing of the hinge type with two tubular V struts, two steel spreader tubes, two Lumex axles and elastic cord shock absorbers.

The propeller has three blades of forged duralumin, fastened to a steel hub in such a way that the pitch of the blades can be readily altered to secure the greatest efficiency These blades are of much thinner section than those of the conventional wood propeller, and on account of the unusually rugged construction, the propeller is remarkably well fitted to withstand the very severe loads which come on it during the race

The cooling water flows from the engine into four radiators of the wing surface type, on each side of the upper wing panel and one on each side of the lower wing panel. The water first enters the header in the leading edge of the wing and thence flows into cooling elements on the upper and lower surfaces of the wing. Each element is constructed of two sheets of thin brass sweated together, the lower sheet slightly corrugated and the upper very deeply corrugated. On account of this construction, the water flows through the elements in very thin streams, so that the cooling power of the radiators is very high, while at the same time the effect of the radiators on the aerodynamic characteristics of the wing is entirely negligible. The construction of the entire radiator is such that it is a comparatively simple operation to remove any damaged cooling element from the radiator for replacement without disturbing the wing or the other elements of the radiator A header in the trailing edge of the wing collects the cold water from the cooling elements and from here it flows to the reserve water tank in the center of the upper wing panel The engine water pump draws directly from the reserve water tank.

As might be expected, the entire machine presents an unusually clean and trim appearance Although this first model of the design is intended primarily for racing, the general characteristics are such that the ship can, without much difficulty, be adapted to a fighting type of superior performance.

A good distinguishing mark of this ship in flight are the prominent aileron connecting struts right behind the I type interplane struts—which none of the Curtiss racers have—and the battleship grey color scheme adopted by the Navy

The Army Curtiss Racers

In 1923 Army-Curtiss Racers are identical with those entered in last year's Pulitzer race, save that one of them is equipped with the new Curtiss D12 Special 500 hp. motor

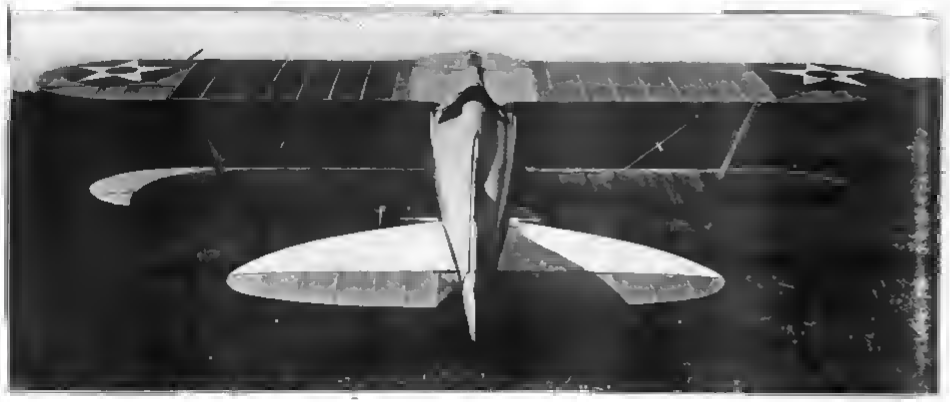
The body structure is formed with "Curtiss-ply," a strong, light 2-ply veneer of laminated spruce 3/32 in. thick The lines of the fuselage were designed around the smallest possible cross-sectional areas, merely large enough to fair in the engine and to accommodate the pilot

The weight of the body complete is only 127 lb. due to the employment of duralumin fittings, together with the use of the Curtiss-ply construction which proved so successful in previous use

Light weight, rigidity and contour stiffness are features of the multi-spar Curtiss-ply covered wings. The Curtiss 27

Official Photo U. S. Navy

Army Curtiss racer, fitted with a Curtiss D12 Special engine, developing 500 hp—one of the Navy's four entries in the Pulitzer Race Piloted by Lieut. Harold J. Brow (above) this ship covered a 1-kilometer course at an air speed of 244 mi./hr. on Sept 13



Rear view of the Navy Curtiss racer entered in the Pulitzer Trophy race

wing section is one developed by engineers from data obtained from testing high speed curves in the elaborate wind tunnel maintained at Garden City

The wing radiators, designed and perfected by the Curtiss Co., deserve special mention. Many tests were made with these corrugated sheet brass radiator surfaces which replace the surfaces of the wings. With this system, advantage is taken of the flow of air around the wings, which cools the engine water without any extra head resistance whatever. They were successfully used on the Curtiss Pulitzer Racers last year

The fixed surfaces, fin and stabilizer are of the Curtiss-ply cantilever construction, with no external bracing. Control surfaces, ailerons, elevators and rudder, are of steel and duralumin, linen covered, they weigh 0.7 lb per square foot of area. All controls are actuated by means of internal cables and operating tubes.

The single strut type of landing gear used has the strength and rigidity of the conventional "V" chassis, yet the resistance has been reduced two-thirds. Even the wheels and hub caps have been streamlined. Wheels are provided with cupped discs of aluminum which covers the spokes and hub, linen covering is applied over the wheel and tire in such a manner that a smooth oval section is presented to the air stream.

The tail skid is made of laminated second-growth hickory, forming an effective shock-absorbing unit adding little to the total resistance of the machine

CHARACTERISTICS

Dimensions	
Span, 26 ft. 0 in	Gap 46½ in
Length, 18 ft. 11 in	Stagger 7½ in
Height, 7 ft. 18 in	Dihedral, 0 deg
Chord (all wings) 46 in	Thread of wheels, 66½ in
Angle of incidence, 0 deg	
Areas	
Upper wing panel with ailerons 68.4 sq. ft.	
Lower wing panels with ailerons, 62.74 sq. ft	
Total supporting wing area (incl. stubs and landing gear fairing 138.0 sq. ft	
Ailerons 6.26 sq. ft.	*Performance*
Horizontal stabilizer 11.0 sq. ft.	High speed 200 mi./hr
Elevator 6.6 sq. ft	Low speed, 70 mi./hr
Fin 4.0 sq. ft	*Weights*
Rudder 4.0 sq. ft.	Light 1454 lb
Wing section, Curtiss 27	Useful load 496 lb
	Gross 1950 lb.

The Navy-Curtiss Racers

Constructionally the Navy Curtiss racers differ very little from the Army-Curtiss racers, the principal innovations being a somewhat smaller and better streamlined body, the placing of the top wing flush with the top of the fuselage and a simplified landing gear. The latter carries the shock absorbers directly in the wheels, whereby a lot of parasite resistance is eliminated.

Another novel feature in the Navy Racer is that the main lift wires of the wings are attached to the landing gear instead of to the fuselage as is the case with the Army racers

The power plant consists of the new 500 hp. Curtiss D12 Special engine with a Reed duralumin propeller and the wing radiators of last year

Although the two types of Curtiss racers look very much alike, particularly in flight, it will be fairly easy to distinguish them from one another, for the Navy ships have golden wings and royal blue body with a "silver" propeller, while the Army ships have a black fuselage with golden wings and golden propeller.

The Army Verville Sperry Racer

The third of the Army Air Service entries for the Pulitzer Race is a redesigned Verville Sperry, R3 Racer, three of which type participated in the Pulitzer Race held at Selfridge Field, Mich. in 1922. The first of the R3 racers made an average speed of 181 mi./hr. in the last Pulitzer Race. On a later date at McCook Field, Dayton, Ohio one of the R3 Racers made a speed in level flight of 193 mi./hr.

One of these R3 racers was redesigned by the Air Service Engineering Division, Alfred V. Verville in charge, and rebuilt by the Lawrence Sperry Aircraft Co. at Farmingdale, L. I. The major changes on the racer are: Installing a Curtiss D12 Special, 500 hp. engine and wing radiators which replaced the Wright 300 hp. engine and two Lamblin model H radiators, and changing the wing tips to an elliptical form which slightly increased the wing area.

In a trial speed test held at Mitchel Field, Sept. 3, the redesigned R3 racer made a speed about 14 per cent higher than the original R3. The factors contributing to the higher speed are more power and less parasite resistance. The Curtiss D12 engine with the large bore (4⅝ in.) cylinders and high compression (1:5.8 compression ratio) delivers about 40 per cent more power than the engine previously used. The parasite resistance was reduced by reducing the frontal area of the fuselage which was made possible by the compactness of the Curtiss D12 engine. The greatest reduction in parasite area was gained by using Curtiss type wing radiators which replaced the Lamblin type. This reduced the flat plate area of the whole machine over 20 per cent.

The Curtiss type wing radiator used on the redesigned R3 is built up in four sections, the upper and lower surfaces of each side making an independent unit. The upper and lower

CHARACTERISTICS OF ENTRIES FOR PULITZER TROPHY

Entry	*Engine*	*Hp.*	*Span*	*Length*	*Wing Area*	*Gross Weight*	*Pilots*
Navy-Wright TX	Wright T3	700	22'0"	21'4"		sq. ft. 2900 lb	Lieut. S. W. Calloway (Navy) Lieut. L. H. Sanderson (Marine Corps)
Navy-Curtiss R2C1	Curtiss D12 Special	500	22'0"	19'8½"	145	sq. ft. 2097 lb.	Ens. A. J. Williams (Navy) Lieut. H. J. Brow (Navy)
Army-Curtiss R6	Curtiss D12 Special*	500	19'0"	18'11"	133	sq. ft. 2110 lb	Lieut. J. D. Corkille (Army) Lieut. Walter Miller (Army)
Army-Verville-Sperry	Curtiss D12 Special	500	30'6"	23'5"	146.5	sq. ft. 2475 lb	Lieut. Alex. Pearson (Army)
Fiat†	Fiat	800					Brak Papa (Italy)

*One of these racers is equipped with the Curtiss D12, 465hp. engine, the same as used in last year's race.
†The characteristics of this plane are not available.

sections are securely held together at the header tanks by ⅛ in. hinge pins. The panel sections of the radiator are supported on the wing surface by 1/16 in. steel wires placed in rows about 9 in. apart. These wires are threaded over the surface of the radiator and through strap metal loops which are secured to the wing covering and extend through eyelets soldered in the radiator panel. To support this type wing radiator, it was necessary to cover the entire surface of the wing and 3/32 in. plywood, which was then covered by the radiator. This material increased the weight of the wing slightly and it also increased the stiffness of the wing which is necessary and a bit difficult to get with an internally braced wing. The wing stiffness is required to eliminate uneven spar deflection caused by the center of pressure travel.

The engine oil is not cooled by the slipstream direct, but by the water. As the water leaves the radiator, it passes through the oil temperature regulator or cooler. This system permits of maintaining a more constant oil temperature in all conditions of flight. This oil temperature regulator is built up around a 9 in. cartridge core. The water passing through the tube and the oil around the tubes a by-pass around this temperature regulator is provided so the oil may be bypassed when cold and stiff to eliminate excessive pressure in the engine outlet oil line.

The general appearance of the plane was improved and better streamlining at the nose was obtained by using an aluminum spinner on the propeller. Also, by the installation of the Curtiss D12 engine, it was possible to lower the thrust line 3 in. below the position in the original R3. This change brought the thrust line closer to the center of resistance and gave a more symmetrical contour to the upper and lower surface of the fuselage.

All plane controls are cable connected the same as on the original R3.

There was no change made in the chassis which folds into the lower surface of the wing and is operated from the cockpit by a hand crank on a shaft and gear system. The position of the chassis is registered by an instrument in the cockpit.

The tail unit and fuselage to the rear of the fire wall is the same as on the original R3. As this fuselage was originally designed to take an engine with larger overall dimensions than the Curtiss D12, it would be possible to build a speedier plane with the same wing, chassis, tail unit and engine on a narrower fuselage which would further reduce parasite resistance. This fact should be considered when comparing the speed of this monoplane with biplane using the same powered engines and designed for this year's race.

The Verville-Sperry racer will be the only monoplane—of cantilever type—in the Pulitzer race unless the Fiat racer, which is believed to be a biplane, turns out to be a monoplane, too

Front view of the modified Verville-Sperry Racer (500 hp. Curtiss D12 Special engine) entered by the Army Air Service in the Pulitzer Race

Army and Navy Pilots in the St. Louis Races

The following brief biographical notes on the Army Air Service and Naval Aviation pilots entered in the various events of the St Louis International Air Races will be of interest.

ARMY AIR SERVICE PILOTS

Event No. 3. Liberty Engine Builders Trophy

(Observation Type, Two-Seater Airplanes)

Maj Roy S Brown, Commanding Officer of Maxwell Field, Fla., will fly a DH4B airplane

Major Brown was born in Minneapolis, Minn He is a graduate of the U S M A, Class of 1908 and entered the Aviation Section of the Signal Corps in 1916 from the 1st Cavalry He was Adjutant of the First Aero Squadron in the early days of 1917, and later was in command of the Fourth Aero Squadron.

1st Lieut Jack Joseph O'Connell will fly a DH4B plane

Lieutenant O'Connel was born in Lakeville, Conn, in 1892, and has served in the Air Service since 1917 He was a student at Yale University before entering the service and had considerable experience in mining engineering in Utah

Lieutenant O'Connell is stationed at El Paso, Tex, with the Twelfth Aero Squadron

1st Lieut W H Bleakley, of the Air Service Station, Aberdeen, Md, will fly a DH4B plane

Lieutenant Bleakley was born at Armagh, Longford County, Ireland, in 1891 He became a naturalized American citizen Dec 13, 1912 He was a student in Trinity College, Dublin, Ireland, before coming to America, where he engaged in aeronautical work In the early days of aviation, Lieutenant Bleakley flew for Pathé Moving Picture Co, and has had more than 5,000 hr flying

1st Lieut Dudley M Outcalt, O-R C, will fly a DH4B plane

Lieutenant Outcalt was born and educated in Cincinnati, Ohio, graduating from the University of Cincinnati with the Degree of A B at the age of 21 He entered the Air Service in 1917.

1st Lieut Howard K Ramey will fly a DH4L plane

Lieutenant Ramey is one of the famous border pilots He hails from Wainsboro, Miss, where he was born in 1896 He later attended the Miss. A. & M. College and entered the automobile business before the outbreak of the war In addition to his knowledge of automobiles, he was an experienced watchmaker before he entered the service in 1917.

1st Lt W T Larson, of Kelly Field, Tex, will fly an XB1A plane

Lieutenant Larson is a native son of California He was born at Varnalis, Calif., in 1892, and attended the Stockton High School and the Polytechnic College of Engineering at Oakland He entered the Air Service in 1917.

1st Lieut Vincent J Meloy, who is at present officer on duty with the National Guard at Nashville, Tenn., will fly an XB1A plane.

Lieutenant Meloy was born in Brooklyn, N Y., in 1895, and graduated from Augustinian Academy in 1916, after which he engaged in the importing business until his entry into the Air Service in 1917 He has held a great number of responsible positions for his age He was for a long time commanding officer of the Air Service Units at McAllen, Tex, and was selected for the National Guard detail on account of his excellent administrative abilities, as well as his extraordinary efficiency in flying

1st Lieut W H Brookley will fly a CO4 plane

Lieutenant Brookley was born at Juanita, Neb., in 1896, and was a chemist before entering the Air Service in 1917 He was a student in the University of Nebraska before the outbreak of the war Lieutenant Brookley established some fame as an athlete during school days

Capt. Robert Oldys will fly a CO4 plane

Captain Oldys was born in Washington, D C., in 1896 and before entering the Air Service was a broker Captain Oldys is one of the most experienced pilots in the Air Service

1st Lieut Lowell H Smith will fly a CO5 plane

Lieutenant Smith was born in 1893 at Santa Barbara, Calif., and is a graduate of the San Fernando Business Academy Lieutenant Smith's name has been prominent in aeronautical circles for several years in connection with the establishment of speed records between San Francisco and Los Angeles. He is at present on duty at Rockwell Field, Calif., but will arrive in St Louis in time for the races.

1st Lieut Sam M Connell will fly a LePère plane

Lieutenant Connell was commissioned in the Air Service in February 1918, after passing all his preliminary flying tests. He was born in 1896 at Inez, N C

Event No. 5. Merchants' Exchange of St. Louis Trophy

(Large Capacity Airplanes)

Capt Edward Bruz Black, at present on duty at Langley Field, Va., will fly a Martin Bomber plane

Captain Black has been in command of the 96th Aero Squadron for a long time and has served over the lines during the war with distinction He was born at Fairfield, Ill in 1893 He was in one of the early training camps at Leon Springs, Tex, before his entry into the Air Service Captain Black was commissioned in Aug 15, 1917 He was a student in the University of Illinois before the outbreak of the war

1st Lieut Leigh Wade will fly a Martin Bomber

Lieutenant Wade was born in Cassapolis, Mich, in 1896, and attended the school in Michigan before entering the Army Lieutenant Wade is an experienced pilot of big ships.

1st Lieut L P Arnold will fly a Martin Bomber

Lieutenant Arnold is a very experienced pilot of ships of all types, and has been extremely successful with twin-engined ships He was born in New Haven, Conn., and attended the Bulkley School at New London, Conn Before entering the service, arnd was an experienced draughtsman Lieutenant Arnold was in France during the war

1st Lieut H L George will fly a Martin Bomber

Lieutenant George was born at Lakeport, N. Y., and attended school in that state before the world war After leaving school he entered business as a hardware salesman, but upon the outbreak of hostilities entered the service. He passed his R M A flying test July 20, 1917

1st Lieut Harrison G Crocker will fly a T2 plane

Lieutenant Crocker sprang into international fame a few months ago when he made a non-stop flight from the Gulf of Mexico to Canada This feat, coming shortly after the transcontinental non-stop flight, demonstrated how easy it would be for aircraft to fly entirely across the United States in both directions without stopping Lieutenant Crocker was born at Wahpeton, N D Being the son of a publisher, he entered his father's printing shop after completing his education He became a monotype expert in his father's office.

1st Lieut Muir S Fairchild will fly a DE1 plane.

Lieutenant Fairchild before his entry into the service in 1917 was a student in the University of Washington at Seattle, where he completed with credit the course of military instruction He was born at Billingham, Wash. Lieutenant Fairchild has been an expert pilot on the GAX airplane which is called by fliers "The Battle Axe"

Event No. 8. Pulitzer Trophy Race

(High Speed Airplanes)

1st Lieut Alexander Pearson, Jr., will fly a Verville-Sperry racer

Lieutenant Pearson sprang into fame a few years ago when, making an attempt to fly from the Pacific coast to the Atlantic with one stop, he disappeared from view over the wilds of West Texas for several days, and later wandered into civilization from his airplane which had been forced down in Mexico He was born near Sterling, Kan., and attended the University of Oregon before entering the service. He is at present on duty at McCook Field

1st Lieut John D Corkille is one of the best known flying instructors in the air service, and will fly a Curtiss Racer

For several years it has been Lieutenant Corkille's duty to pass upon flying students who have completed their training.

His name is a household word among cadets and new flying officers in the Air Service, it being a common saying that "You don't know whether or not you can fly until you have passed Johnny Corkille." He was born in Chicago, Ill., and went to school in Chicago, Arkansas and Oklahoma He was an experienced high school teacher before entering the Air Service in 1917.

1st Lieut Walter Miller will fly a Curtiss Racer

Lieutenant Miller was born at Lawrence, Mass., and attended school in that state He was in the Coast Artillery before entering the Aviation Section of the Signal Corps in 1917 Lieutenant Miller is at present on duty at Crissy Field, Calif.

Event No. 8A. John L. Mitchell Trophy

(Service Type Thomas-Morse Pursuit Airplanes)

1st Lieut Thomas W. Blackburn will fly an MB3 plane.

Lieutenant Blackburn is one of the well known war time pursuit pilots. He is still in the First Pursuit Group at Selfridge Field, Mich Lieutenant Blackburn was born at Cove Hill, Ark, and attended school in Oklahoma and Missouri before the outbreak of the war. After leaving school he entered the automobile business with the Packard Co at Detroit, Mich.

1st Lieut Thomas K. Matthews will fly an MB3 plane

Lieutenant Matthews was born at Earlville, Iowa He attended school in Montana, where his father now lives. Lieutenant Matthews was a motor expert before he entered the Air Service. He is now on duty with the First Pursuit Group, Selfridge Field

1st Lieut George O Tourtellot will fly an MB3 plane

He was born at Dawes, Iowa, and was a student at Carroll College, until a short time before the war

1st Lieut Russell L Meredith will fly a MB3 plane

Lieutenant Meredith is now on duty with the First Pursuit Group He did his first official flying in 1916. The week ending Dec 30, 1916, Lieutenant Meredith had made a total of 16 flights, and at this time was a student at the U. S Military Academy on leave. All of Lieutenant Meredith's flights connected with the Air Service has been of great credit He is at present on duty with the First Pursuit Group, Selfridge Field, Mich.

1st Lieut Thad Johnson will fly an MB3 plane

He was born at Johnson City, Tex, and graduated at Trinity College, Waxahachie, Tex. He was a high school principal for two years. In addition to teaching, Lieutenant Johnson, like the immortal Belvin Maynard, was also a minister of the Gospel.

Changes in Army Entries

Due to certain exigencies of the service, the Chief of Air Service has found it necessary to revise the list of Army Air Service entrants in the International Air Races to be held at St Louis, Mo., Oct 1 to 3 inclusive Following is the revised list of the pilots and alternates.

Event No 3—Observation Two-Seater Type of Airplanes: DH4B airplanes—Maj Roy S Brown, 1st Lieuts J J. O'Connell, W. H Bleakley, D M. Ontcalt (O.R.C.) pilots; Maj. C L Tinker, 1st Lieuts E M Powers, W. A Maswell, W B Robertson (O R C.) alternates, DH4L airplanes—Lieut. H. K Ramey, pilot; Lieut H W Beaton, alternate, XB1A airplanes—Lieuts W T Larson and V. J Meloy, pilots; Lieuts P T. Wagner and E. Holterman (O R C.) alternates, CO4 airplanes—Lieuts. C McMullen and H N Hersen, pilots, Maj B. Q. Jones, alternate, CO5 airplane—Lieut. Lowell H. Smith, pilot, Capt. Ernest Clark, alternate, Packard Fokker airplane—Capt Robert Oldys, pilot, Curtiss D12 airplane—Lieut W H. Brookley, pilot.

Event No. 5—Large Capacity Airplanes: Martin Bombers—Capt. E. C Black, Lieuts. Leigh Wade, Leslie P. Arnold, H L. George, pilots, Lieuts. H D Smith, Aubrey Hornsby, Ross F Cole and J. F. Whiteley, alternates; T2, Lieut. H G Crocker, pilot, and Lieut G. H Beverley alternate, DT2 airplane, Lieut. Robert J Brown, jr, pilot, Bréguet 14B2 airplane—Lieut. M. S Fairchild, pilot, and Lieut. G. C Kenney, alternate.

Event No. 8—High speed airplanes (Pulitzer Trophy) Verville-Sperry Racer, Lieut Atexander Pearson, pilot, and Lieut. J K. Cannon, alternate; Curtiss Army Racers—Lieuts. J D Corkille and Walter Miller, pilots; Lieuts. H H Mills and Lacas V Bean, Jr., alternates.

Event No. 8a—Service type pursuit airplanes (Mitchell Trophy) MB3 airplanes—Lieuts. T W Blackburn, T K. Matthews, G. P. Tourtellot, Thad J. Jahnson, Capts. V B. Dixon and Burt E Skeel, pilots; Lieuts Leland C Hurd, F. O D Hunter, A G Liggett, L. C. Simon, E M Haight and H R Yeager, alternates.

Lieuts. Russell L. Maughan and Lester J Maitland, who finished first and second, respectively, in the Pulitzer Race last year at Detroit, will not compete this year in the races at St Louis, since it is the policy of the Chief of Air Service to have different pilots fly in the international races each year As a result of this policy, the officers entered in the races this year are an entirely new group

The above policy also embraces the selection of pilots from different Air Service fields and commands throughout the United States as far as possible, to the end that all officers of the Army Air Service may know that they are being considered for participation in this annual aviation classic. In order to afford all Air Service pilots an opportunity to fly the different types of airplanes, this policy is rigidly adhered to, as the Chief of Air Service feels that the morale of his personnel must be kept at the highest pitch regardless of the feasibility of assigning to participate in this important event pilots with former experience in flying high speed airplanes.

Official Photo, U S Navy

Lt Comdr Marc A. Mitscher, U.S.N., in charge of Naval Detail at St Louis

NAVAL AVIATION PILOTS

The team of Naval Aviators who will participate in the St Louis Races is in charge of Lt. Comdr. Marc A Mitscher, U S N.

Commander Mitscher was born Jan 26, 1887, Hillsboro, Wis. Appointed to Naval Academy, 1906, he graduated from the Naval Academy, 1910 Duty on armored cruisers, gunboats and destroyers. Entered Naval Aviation in 1915 at Pensacola, Fla (first naval air station) Beginning of war on U S S Huntington, catapult duty During war Naval Air Stations, Montauk Point, L. I., N Y, Rockaway, L. I., N Y, and Miami, Fla In command spotting squadrons Pacific Fleet for two years. In command, Naval Air Station Anacostia, D C, for six months in 1922 Now in Plans Division Bureau of Aeronautics. Was in command of the team of Navy pilots who took part in the Detroit Air Races in October, 1922.

Official Photo, U. S. Navy

Pilots of Navy entries in St. Louis Air Races—(1) Lt. S. W. Callaway, U.S.N.; (2) Ens. A. J. Williams, U.S.N.; (3) Lt. M. A. Schur, U.S.N.; (4) Bsn. E. E. Reber, U.S.N.; (5) Lt. H. J. Brow, U.S.N.; (6) Lt. L. H. Sanderson, U.S.M.C.; (7) Lt. C. B. Hall, U.S.M.C.; (8) Ens. D. C. Allen, U.S.N.

Event No. 3. Liberty Engine Builders' Trophy

(Observation Type Two-Seater Airplanes)

Ens. Dolph C. Allen, U.S.N., will fly a Curtiss 18T plane

Ensign Allen is 27 years old and was born in San Diego, Calif. He attended the University of California, and has been in Naval Aviation since 1919. He has served as a test pilot, and instructor and a spotting plane pilot. Ensign Allen has approximately 1100 hr. in the air.

1st Lieut. Guy B. Hall, U.S.M.C., will fly a Vought UO1 plane.

Lieutenant Hall is twenty-eight years old and was born at Drakestown, Ark. He was educated at Grinnell College, Grinnell, Ia. He entered Naval Aviation in September 1919 at the Naval Air Station, Pensacola, Fla. During the summer of 1920 he was at the Army Air Service Pursuit School for instruction. During 1921 and 1922 Lieutenant Hall was stationed at Port-au-Prince, Haiti, with Marine Observation Squadron Two. He was at the First Aviation Group, Marine Barracks, Quantico, Va. from January to July 1923. Lieutenant Hall was a member of the team of Marine pilots who made a transcontinental flight with four Martin Bombers in April, 1923.

Event No. 5. Merchants' Exchange of St. Louis Trophy

(Large Capacity Airplanes)

Lieut. (j.g.) Menard A. Schur, U.S.N., will fly a Douglas DT4 Bomber.

Lieutenant Schur is 20 years old and was born at Marshfield, Ore. He attended the Christian Brothers Business College at Portland, Ore. He entered the Navy from civilian life in 1012, and entered Naval Aviation in December, 1916. He was Officer-in-Charge Aviation Ground School, Dunwoody Naval Training School, Minneapolis, Minn. from January 1918 to January 1019. He has served as flight instructor at the Naval Air Station, San Diego, Calif., and as a pilot in the Aircraft Squadrons, Battle Fleet on the Pacific. He was for some time a flight instructor at the Naval Air Station at Pensacola, Fla.

Boatswain Earl E. Reber, U.S.N., will fly a Douglas DT4 Bomber.

Boatswain Reber is thirty four years old and was born in Chicago. He attended the High School of Oelwein, Ia. He has been in the Navy for fifteen years, including two years in the Asiatic Fleet, two years at the Bremerton Navy Yard, and four years with the Pacific Fleet. He entered Naval Aviation at the Naval Air Station, Pensacola, Fla., in December, 1918. In April 1917 he was detailed to the Naval Air Station, Hampton Roads, Va. For seven months in 1917 he was an instructor at Boston Tech aviation ground school. During 1918 he was a patrol and test pilot at the Naval Air Station, Chatham, Mass. During 1919 and until April 1920 he was at the Naval Air Station, San Diego, Calif. While there he took a course in landplane flying at the Army station there. For the past two years he has been with the Air Squadrons of the Battle Fleet in the Pacific. He was in torpedo plane squadrons spotting plane squadrons and combat plane squadrons.

Event No. 8. Pulitzer Trophy

(High Speed Airplanes)

Lieut. (j.g.) Steven W. Callaway, U.S.N., will fly a Navy-Wright racer.

Lieutenant Callaway was born March 10, 1895 at Bismarck, N. D. He lived in Montana until 17 years of age, and attended Montana A. and M. College at Bozeman, Mont. He moved to California in 1910 and attended school and first started aviation work. Built own machines and did own work. Planes were of the pusher type and were built of any kind of wood that was light and strong. The wings had fabric on one side only, as it was thought that fabric on both sides would be too heavy and parasite resistance had no worries as it had never been heard of. He enlisted in the Navy the day after the United States declared war and was on the U.S.S. Huntington, then a seaplane carrier, and remained there until September, 1917. He was transferred from U.S.S. Huntington to Naval Air Station, Rockaway, L. I., N. Y. and from there to Minneapolis as instructor in the ground school for student officers. Later transferred to the Naval Air Station, Miami, Fla., and then to Pensacola, Fla., to qualify as a Naval Aviator. Went on inactive duty in February 1919 and took up commercial flying in California, where he remained until June 1920 when he went back in the Navy. Attached to Pacific Air Squadrons as a test pilot and spotter

Detached from there and reported to the Naval Air Station at Anacostia, D. C. on June 1, 1922. Member of the team of Naval Aviators who took part in the Detroit Air Races last October.

2nd Lieut. Lawson H. Sanderson, U.S.M.C., will fly a Navy-Wright Racer.

Lieutenant Sanderson was born at Shelton, Wash., July 22, 1895. He attended University of Washington, and entered U. S. Marine Corps April, 1917, entering aviation April 1918. He served as instructor at Miami, Fla., to June 1918, and with aviation in Haiti and Santo Domingo 1919 and 1920. He flew in Pulitzer Races Nov. 27, 1921. Made flight to West Indies and return from Washington, D. C. in April, 1921. Served with Marine aviation in Haiti five months in 1922. Member of team that represented the Navy and Marine Corps in the Detroit Air Races last October. Flew in Pulitzer Race. He is now a test pilot attached to the Bureau of Aeronautics.

Ens. Alfred J. Williams, U.S.N., will fly a Navy-Curtiss Racer.

Ensign Williams was born July 26, 1894, Bronx County, New York, N. Y. A.B. degree, Fordham University, New York City. Upon graduation from College signed to play professional baseball with the New York "Giants." In the meantime took up study of law at Fordham University Law School and remained thus engaged until the entry of the United States in the World War; retired from baseball after two seasons with the "Giants" and entered business. Entered Naval Reserve Force and went to the ground school for Aviation at Boston Tech. Upon completion of ground school course was detached and reported for elementary training at Bayshore, L. I. thence to Naval Air Station, Pensacola, Fla. and commissioned and designated as Ensign and Naval Aviator. Received training as night bomber and retained at Pensacola as a gunnery pilot and then as an instructor in elementary training. Later detached and reported to Naval Air Station, Hampton Roads, Va. as a test pilot. Ordered to the Naval Air Station, Annacostia, D. C. in April 1923. Was a member of the team of Navy pilots that participated in the Detroit Races in the fall of 1922.

Lieut. Harold J. Brow, U.S.N., will fly a Navy-Curtiss Racer.

Lieutenant Brow was born at Fall River, Mass., Dec. 30, 1894. Home now at Providence, R. I. In Naval Aviation since April 6, 1917. Trained at Pensacola, Fla., then on patrol and instruction duty at Miami, Fla., trained on pursuit planes at Carlstrom Field, Fla. Attached to Atlantic Fleet Torpedo Plane Squadron from July 1920 to December 1921. Led Squadron of Navy Martin Bombers during the bombing of ex-German Battleships off Virginia Capes in 1921. Member of team of Navy pilots who took part in the Detroit Air Races last October. At present stationed at the Naval Air Station Anacostia, D. C.

The Italian Entrants

Brack-Papa, Italian Ace and former holder of the world's speed record, will bring to the International Air Races a Fiat racer equipped with Fiat engine capable of developing 800 hp. Compared with the 700 hp. limit of American racing planes so far developed, this will give the Italians an apparent advantage of 100 hp.

Brack Papa, according to cables received by the St. Louis Air Board, will be accompanied by Mario Fossati, an Italian aeronautical engineer and a flier of some note himself. They will bring two Fiat planes, a single seater, in which Brack-Papa will compete in the Pulitzer race, and a two-seater in which both men will probably enter other races. Brack-Papa's best record is 208.5 mi./hr., made at Milan, Aug. 29, 1922. This remained the world's record until Sept. 21, 1922 when Sedi-Lecointe, the Frenchman, raised it to 213.5 mi./hr. at Etampes, France. The crown did not long remain on the Frenchman's head, however, for on Oct. 18, 1922, Brig. Gen. Wm. Mitchell, Assist. Chief of the United States Army Air Service, established a new world's record of 224.58 mi./hr. in a trial at Detroit. This remained the world's record until March 29, 1923, when Lieut. Russell L. Maughan, winner of the Pulitzer Trophy at Detroit last year, established the present speed record of 236.5 mi./hr. at Dayton, Ohio. It is worthy of note that Maughan established this record in a Curtiss racer equipped with a 450 hp. engine, so it would seem that not all depends on horsepower.

Brack-Papa aviation record is as follows: 1913—Italian Record of Altitude: 3050 meters. Farman 12 with 70 hp. Renault motor; 1914—Italian Record of Altitude: 4000 m. Farman 14 with 80 hp. DeDion motor; 1915—Italian Record of Altitude with one passenger: 6150 m. S.P. plane with Fiat motor; 1917—Italian record of altitude with one passenger: 6750 m. Fiat plane 300 hp.; 1919—World's Speed Record with one passenger: 270 km./hr. Fiat plane BR 600 hp.; 1919—World's record of altitude with 3 passengers: 7250 m. Fiat BR. 700 hp; 1919—Record Trip Torino-Rome 1hr. 15mn.; 1919—Non-stop Raid from Rome to Paris, 1300 km. with flight over Mount Blanc; 1919—Raid Paris-London Brussels-Amsterdam; 1920—World's Speed Record with four passengers: 250 km./hr. Fiat Transatlantic Plane 700 hp; 1921—Deutsch de la Meurthe Cup (France). Wins World's 100km. speed record at 300 km./hr.; 1921 Bureaco cup (Italy). Started the thirtieth, he passed all his competitors completing the 1000 km. course and arriving at the end, at Ravenna two hours ahead of his nearest competitor. 1922—Nice Meeting (France). Wins the speed match against Sadi-Lecointe as well as the Silver cup of the Aero Club of the Cote d'Azur. 1922—Turin Strasbourg in two hours, with flight over Mount Ross. 1922—At the meeting of Epinal (France) organized by René Fonck, the interallied ace Brack-Papa won the "Circuit of the Vosges" over thirty French competitors, winning the Great Silver Cup of the Aero Club of the Vosges. He also won the speed match Epinal-Strasbourg the day of the Grand Prix. Strasbourg to Milan, in 1hr. 50 min. over the Swiss Alps. 1922—World's Speed Record 337 km./hr.

Brack-Papa has flown about 6000 times as an instructor and more than 16,000 times altogether. He started to fly in 1911, and obtained his pilot certificate in France at the beginning of 1912.

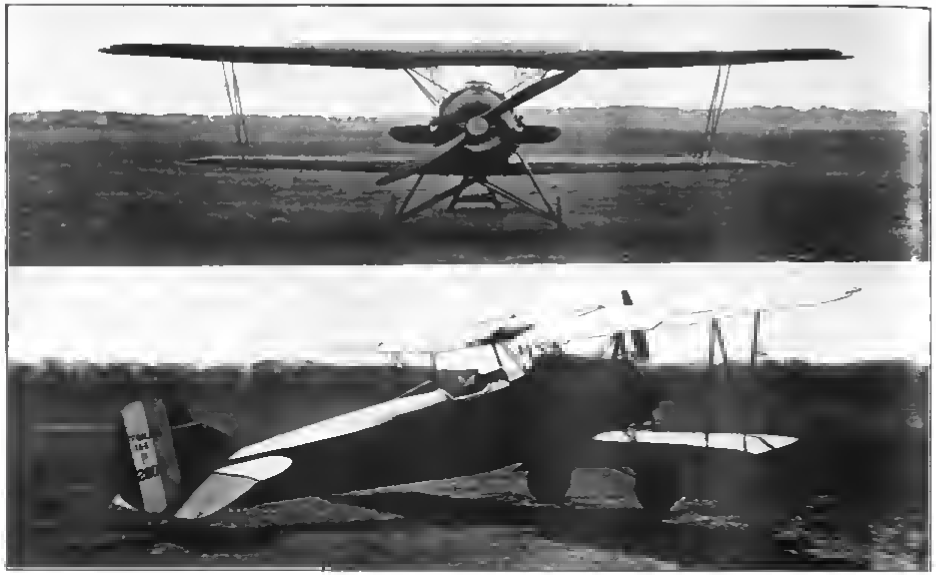
Mario Fossati's aviation record is as follows: As an aeroplane builder he took part in all of Brack-Papa's raids, made world's record with passengers, 1920. ARF plane 700 hp. He was an observer in the raid Torino-Rome, 1919, in the world's record of altitude in 1917, and in the 1000 km. speed race won by Brack-Papa in 1921. At the second raid "Barraca" 1922, as an observer for Brack-Papa, he won for his accurate throwing of the spear. He has taken part in all the foreign competitions of Brack-Papa. Since 1917 he is the trusted engineer of Brack-Papa both in the construction of planes and in the most important races, and has been his flying companion both during the war and after.

There is considerable uncertainty regarding the types of planes the two Italian fliers will pilot in the St. Louis races. The Fiat Co. produced in 1920 both a racer and a long range day bomber fitted with the Fiat 700 hp. engine, and improved ships of these types may have been sent to St. Louis.

Two Italian crack fliers entered in the St. Louis Air Races—Mario Fossati (left) and Brak-Papa. They will pilot Fiat planes.

Huff-Daland Model TA6 Advanced Training Plane

Safety, Simplicity and Ease of Alignment and Assembly Chief Features of New Plane



Two views of the Huff-Daland TA6 advanced training plane equipped with a 200 hp Wright-Lawrence J1 radial engine

Huff, Daland & Co., Inc. plans to be represented by two airplanes at the National Air Races in St. Louis. One of these is the TA6 advanced training plane, which was purchased and tested by the U. S. Army Air Service in the early Spring of 1923, to be piloted by Lt. H. R. Harris; the other is the new "Petrel", Model 4, the company's latest contribution to the commercial field, piloted by George B. Post. The two planes will fly to St. Louis from Ogdensburg, N. Y., where the TA6 has been undergoing studies and tests in preparation for the production of five TW5 training planes on a recent order received from the Army Air Service.

Both the TW5 and the "Petrel", Model 4, are cantilever biplanes carrying the same type of wings, fuselage, and landing gear as the TA6, but are equipped with Wright E or Curtiss OX5 motors, instead of the Wright Lawrence J1, with which the TA6 is powered. Details and specifications of these airplanes are not yet completely prepared for publication, but it is felt that the following description of the TA6, which applies in general to all three machines will prove of timely interest.

Designed as an advanced plane for the U. S. Army where rugged construction and protection for student and instructor in case of serious crash were of primary importance, a steel tubular fuselage, welded into a complete unit without the use of inter-bay wires was chosen as the most serviceable type. Alignment problems during manufacture presented unusual difficulty in construction, but the fact that this type of fuselage completely eliminated the possibility to give and take, and the necessity for realignment due to hard usage and climatic changes in service, more than compensated for the difficulties involved.

The wings are of the pure cantilever type, tapering in plan as well as in section, based upon the USA35 aerofoil, and resulting in a very stiff structure with excellent characteristics for maneuverability and ease of lateral control. Both wings are built upon continuous box spars, faced with double diagonal spruce planking on either side. The upper wing is supported by two tripods and two adjustable flying struts of steel tubing, while the lower wing is raised into a recess in the fuselage, and drawn home by two tie rods bolted in place. Ailerons are carried in the upper wing only and built upon torque tubes operated by push and pull rods from the control system in the fuselage. Elevator and stabilizer are of unusually high aspect ratio resulting in a large amount of inherent stability without any sacrifice of delicate control, and are moved by wires in conventional manner.

The landing gear is a noteworthy example of the tripod type which does away with the conventional axle between the wheels, and the consequent danger of tailing and nosing over in tall grass or grain. Shock absorbtion is taken care of by two special units bolted to the axle which are readily accessible and can be easily removed for repair. Interchangeable pneumatic and rubber units have both been used with complete success.

The fuel system consists of two 22 gal. aluminum crashproof gas tanks located between the spars of the upper wing on either side of the fuselage. Gravity feeds are carried from front and rear of both tanks through a three-way valve and standard air service strainer to the carburetor resulting in remarkably simple and fool proof design.

The TA6 was first flown by Art Smith from the frozen surface of the St. Lawrence in February 1923 in acceptance trials for the Army Air Service. Since then it has been in constant service at Ogdensburg and Dayton, receiving excellent reports on its maneuverability and general flying qualities and from a maintenance stand point.

The following specifications and data are taken from the official performance of the TA6, as made at McCook Field under fully loaded conditions. Subsequent tests with a more suitable propeller have materially increased both climb and speed.

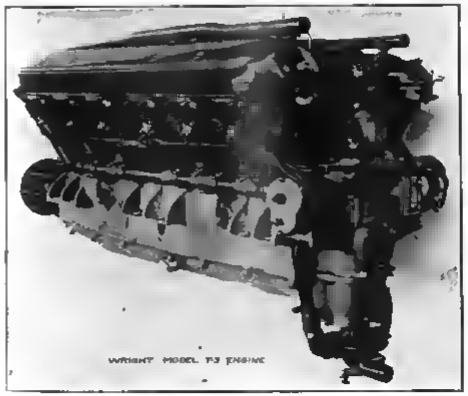
CHARACTERISTICS OF THE HUFF DALAND TA6 TRAINING PLANE

Engine, Wright Lawrance J1, 200 hp.
Span upper wing, 31 ft.
Span lower wing, 23 ft. 0 in.
Length overall, 23 ft. 6 in.
Weight, empty, 1246 lb.
Weight loaded, 1964 lb.
Useful load, 718 lb.
Fuel capacity, 43 gal.
High speed, 115 mi./hr.
Climb in 10 min., 5800 ft.
Ceiling, 20,600 ft.

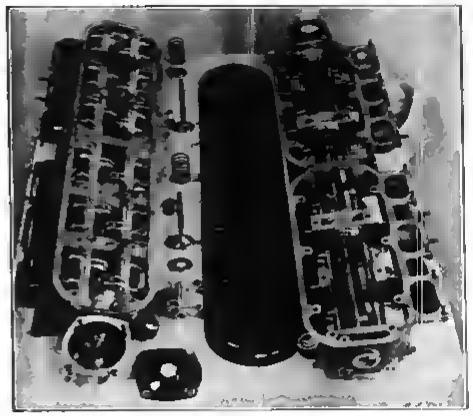
A New Powerplant

Wright Model T3 Aviation Engine

The Wright Model T3 engine represents the latest development in the 600 hp. water-cooled class of aviation engines, and is a further development of the Wright T2 engine which has been in production over a year. It is a 60 deg. Vee Twelve, with cylinders 5¾ in. x 6¼ in., which gives a displacement of 1947 cu. in. This engine has two power ratings, 575 hp. at 1800 r.p.m. and 650 hp. at 2000 r.p.m. The weight dry, with complete equipment, is 1150 lbs., which gives a weight ratio in the latter case of 1.77 lb./hp. This is a 16 per cent reduction in the weight per horsepower of the Liberty engine. The Model "T" series was brought out in response to the demand of the Navy Department for a power plant of considerably greater power than the Liberty, but of about the same size and weight. Not only was a larger power unit required, but it was felt that it was now possible, after approximately six years of development work, to build a more efficient and durable aircraft engine.



Wright Model T3, 700 hp. engine



Camshaft housing assembly of the Wright T3 engine

The T3 differs from the T2 in detail only, the bore and stroke of the two engines being identical. Greater power has been secured by an improved intake system. Smaller overall dimensions have been secured by a careful redesign, so that the engine is 5 in. shorter than the Liberty. Greater durability even than the T2 is provided by certain changes in material and by increasing the sizes of certain bearings. Maximum smoothness in operation has been secured by a 3¼ in. crankshaft, a very rigid crankcase and cylinder construction, as well as improved carburetion.

The new engine is suitable for use in any type of plane requiring its power. Due to the low weight per horsepower and small overall dimensions, coupled with the ability to run for long periods without overhaul, it is particularly adaptable to bombers, seaplanes, torpedo planes and large ships for the mail service, as well as two-seater fighters.

Real Commercial Aviation

Fight Pictures Carried by Air

On Friday, Sept. 14, at midnight W. L. Smith took off in a Curtiss machine from Van Courtlandt Park, carrying photographs of the knockout and other pictures of the fight westward. He served Cleveland and Chicago and arrived at Omaha at 3.45 p. m. Saturday. The pictures and mats were delivered to a representative of the News Enterprise Association at Omaha, who took them aboard a special train on the Union Pacific for Cheyenne, where Kenneth Unger piloting a K6 Curtiss Oriole received them. He left Cheyenne at daybreak Sunday morning, stopping at Salt Lake City and arriving at Frisco at 5.30 Sunday afternoon, making the total delivery time across the continent forty-one and a half hours.

This quick service made it possible for the Newspaper Enterprise Association to serve its papers far ahead of all competitors. They registered a scoop of five hours at Cleveland, Chicago and Omaha, and a much longer time in the Far West.

Curtiss is establishing in cross-country flying operations the same ascendancy that is recognized in the industry on account of its engineering and manufacturing ability.

World's Airplane Record Recognized by the F.A.I.

According to the June, 1923, issue of the "Bulletin de la F.A.I."

Following is a list of the world's official airplane records as recognized by the International Aeronautical Federation (F.A.I.). The information is taken from the June, 1923, issue of the *Bulletin de la F.A.I.*, the official organ of the Federation which appears quarterly.

MAXIMUM DISTANCE

Holder United States—Lieuts. Oakley G. Kelly and John A. Macready, A.S. on U.S. Army-Fokker T2 (400 hp. Liberty), at McCook Field, Dayton, Ohio, April 16-17, 1923.—*Record 4050 km (2541 mi.)*

MAXIMUM DURATION

Holder United States—Lieuts. Oakley G. Kelly and John A. Macready, A.S. on U.S. Army-Fokker T2 (400 hp. Liberty), at McCook Field, Dayton, Ohio, April 16-17, 1923—*Record 36 hr. 4 min. 34 sec.*

MAXIMUM ALTITUDE

Holder United States—Lieut. John A. Macready, A.S. on Lepère (400 hp. Liberty), at McCook Field, Dayton, Ohio, Sept. 28, 1921—*Record 10,518 m (34,509 ft.)**

MAXIMUM SPEED

(One-kilometer course)

Holder United States—Lieut. Russell L. Maughan, A.S. on Army-Curtiss racer (465 hp. Curtiss D12) at Wilbur Wright Field, Dayton, Ohio, March 29, 1923—*Record. 380.751 km/hr (236.5 mi./hr.)*

SPEED OVER 100 KM. DISTANCE

Holder United States—Lieut. Russell L. Maughan, A.S. on Army-Curtiss racer (465 hp. Curtiss D12) at Selfridge Field, Mount Clemens, Mich., Oct. 14, 1923—*Record 330.466 km/hr (204.85 mi./hr.)*

*On Sept. 3, 1923 at Villacoublay, France, Sadi Lecointe reached an altitude of 10,720 m. as indicated by corrected barograph readings. This figure has been homologated by the Aero Club of France, and will become the new official world's altitude record when it is registered by the F.A.I.—EDITOR.

SPEED OVER 200 KM. DISTANCE

Holder United States—Lieut. Russell L. Maughan, A.S. on Army Curtiss racer (465 hp. Curtiss D12) at Selfridge Field, Mount Clemens, Mich., Oct. 14, 1923—*Record 331.165 km/hr. (205.5 mi./hr.)*

SPEED OVER 500 KM. DISTANCE

Holder United States—Lieut. Alexander Pearson, A.S. on Verville-Sperry racer (350 hp. Wright) at McCook Field, Dayton, Ohio, March 29, 1923—*Record 270 km/hr. (167.2 mi./hr.)*

SPEED OVER 1000 KM. DISTANCE

Holder United States—Lieut. Harold R. Harris, A.S. and Ralph Lockwood on DH4L (400 hp. Liberty) at McCook Field, Dayton, Ohio, March 29, 1923—*Record 205 km/hr (127.2 mi./hr.)*

SPEED OVER 1500 KM. DISTANCE

Holder. United States.—Lieut. Harold R. Harris, A.S. on DH4L (400 hp. Liberty), at McCook Field, Dayton, Ohio, March 29, 1923—*Record 184.03 km/hr (114.2 mi./hr.)*

SPEED OVER 2000 KM. DISTANCE

Holder United States.—Lieut. Harold R. Harris, A.S. on DH4L (400 hp. Liberty) at McCook Field, Dayton, Ohio, April 17, 1923—*Record 183.53 km/hr. (114 mi./hr.)*

SPEED OVER 2500 KM. DISTANCE

Holder. United States—Lieuts. Oakley G. Kelly and John A. Macready, A.S. on U.S. Army-Fokker T2 (400 hp. Liberty) at Wilbur Wright Field, Dayton, Ohio, April 16-17, 1923—*Record 115.6 km/hr (71.7 mi./hr.)*

SPEED OVER 3000 KM. DISTANCE

Holder United States—Lieuts. Oakley G. Kelly and John A. Macready, A.S. on U.S. Army-Fokker T2 (400 hp. Liberty) at Wilbur Wright Field, Dayton, Ohio, April 16-17, 1923—*Record 115.27 km/hr (71.5 mi./hr.)*

One of the two Army-Curtiss Racers (465 hp. Curtiss D12) entered by the Air Service in the Pulitzer Trophy race. It was on this ship that Lieut. R. L. Maughan, A.S. established the present world's records for maximum speed and speed over 100 km. and 200 km. distances

SPEED OVER 400 KM. DISTANCE

Holder. United States.—Lieuts. Oakley G. Kelly and John A. Macready, A.S. on U.S. Army-Fokker T2 (400 hp. Liberty) at Wilbur Wright Field, Dayton, Ohio, April 16-17, 1923—*Record 113.93 km./hr. (70.4 mi./hr.)*

USEFUL LOAD CARRYING FOR DURATION

1500 kg. Useful Load

Holder: Great Britain.—Capt. C. T. R. Hill on Handley-Page W8 (two 450 hp. Napier Lion engines) at Cricklewood, England, May 4, 1920—*Record 1 hr. 20 min.*

USEFUL LOAD CARRYING FOR ALTITUDE

(A) 250 kg. Useful Load

Holder: France.—Jean Casala on Blériot-Spad (400 hp. Bristol Jupiter) at Buc, France, March 20, 1923.—*Record 7,[illegible] m. (24,068 ft.)*

(B) 500 kg. Useful Load

Holder: Spain.—Thierry on Bréguet 19A2 (400 hp. Lorraine) at Cuatro Vientos, Madrid, Spain, March 12, 1923—*Record 3,992 m. (13,654 ft.)*

(C) 1,000 kg. Useful Load

Holder: France.—Jean Casala on Blériot S45 (four 180 hp. Hispano-Suiza engines), at Buc, France, June 1, 1923—*Record 4,990 m (16,367 ft.)*

(D) 1,500 kg. Useful Load

Holder: Great Britain.—Capt. C. T. R. Hill on Handley-Page W8 (two 450 hp. Napier Lion engines) at Cricklewood, England, May 4, 1920.—*Record 4,267 m. (14,000 ft.)*

Is This It?

The Fiat 700 hp. Racer which Brak Papa flew in the 1921 Deutsch Trophy Race and which may be the ship entered in the Pulitzer Race

British Warship Bombing Tests

Bombing tests with the old British battleship Agamemnon, steered by radio, were recently conducted by the Royal Air Force. The ship, moving at 14 knots was put out of action by a bomb dropped from an altitude of 8000 ft.

The bombing trials were carried out by six big bombers, and the missile that struck the Agamemnon was one of the two direct hits made out about 100 bombs dropped, although ten fell within 20 ft. of the vessel. British experts consider the trials to have been successful.

Program of Second National Air Institute

The Second National Air Institute of the Aeronautical Chamber of Commerce of America, will be held at St. Louis Oct. 2, at the time of the International Air Races. Four members of President Coolidge's cabinet—the Postmaster General and the Secretaries of Commerce, Agriculture and Interior—are among the distinguished individuals from political and civil life who have prepared papers on "Putting Aircraft to Work" which is the keynote of this year's Institute.

The purpose of the Air Institute is to direct the thought of the country toward the constructive uses to which airplanes and airships can be put—uses which will bring the taxpayer a direct return and at the same time contribute to the national defense. The theme is to be presented by Postmaster-General Harry S. New, who, first as a business man and publisher, and more recently as a United States Senator from Indiana, has devoted considerable thought to the steps which are necessary to develop American aviation upon a sound basis.

The Second Assistant Postmaster-General, Col. Paul Henderson, will present a report on the operation of the Air Mail Service, with especial reference to the extension of night flying, recently demonstrated successfully between Chicago and Cheyanne, to other parts of the country.

Herbert Hoover, Secretary of Commerce, has prepared a general discussion of the peace-time commercial uses of aircraft, as applied particularly to marine work of the Bureau of Fisheries and Bureau of Lighthouses and special services in the Bureau of Standards and the Coast and Geodetic Survey.

The paper presented by H. C. Wallace, Secretary of Agriculture, will be of great importance, as his department, in the last few years, has saved the country many millions of dollars through the operation of the Aerial Forest Patrol and by utilizing airplanes and airships in spraying orchards and forests to combat insect pests and plant diseases.

Dr. Hubert Work, Secretary of the Interior, was Postmaster-General when Colonel Henderson obtained authorization for the famous night-flying experiments, and he has since remained an earnest pleader for American leadership in peace-time aviation. The Interior Department is using or contemplates using aircraft in the Geological Survey's mapping work, the Bureau of Mines, the National Park System, and also in connection with rail transportation in Alaska.

The Treasury Department has a twofold interest in aircraft, first as couriers to accelerate banking and finance through the Federal Reserve System, and second, by the savings of life and property through the Coast Guard. Rear Admiral William E. Reynolds, Commandant of the Coast Guard, will represent the Treasury.

The scientific developments in aircraft are to be discussed by Dr. Joseph S. Ames, Executive Chairman, National Advisory Committee for Aeronautics.

How the Army and Navy Air Services are looking to commercial aviation for reserves in production facilities and trained personnel will be told in papers by Maj. Gen. M. M. Patrick, Chief of United States Air Service, and Rear Admiral W. A. Moffett, Chief of Naval Bureau of Aeronautics.

Comdr. J. C. Hunsaker, Chief of Design, Naval Bureau of Aeronautics, and designer of the rigid airship ZR1 will discuss the practical commercial side of airship operation, as exemplified by the ZR1 and by the ZR3, which is to be flown from Germany to the United States, late this fall.

John G. Lonsdale, President National Bank of Commerce, St. Louis, an officer of the Federal Reserve System, will present his recommendation to the banks of the country for the utilization of aircraft in the reduction of "float" and the saving of interest charges.

The railways' attitude toward aviation will be discussed by A. H. Smith, President of the New York Central Lines. Mr. Smith believes the railways will find in aerial transport a useful supplementary high speed service.

The need for Federal air law will be presented by W. Frank Carter, a leader of the St. Louis bar, and the development of the automotive industry will be the subject of a paper by Coker F. Clarkson, General Manager, Society of Automotive Engineers.

Gothenburg International Aeronautical Exposition

Several New Types of Military and Commercial Planes Shown at Swedish Exposition

The International Aeronautical Exposition held July 20-Aug. 12 at Gothenburg, Sweden, was, according to all accounts, a great success. For one thing, it was the first really international aeronautical gathering since the war of 1914-18, the aircraft and pilots present representing France, Great Britain, Germany, Holy, Czechoslovakia, the Netherlands, Denmark and Sweden. (The only American exhibit was that of the Pioneer Instrument Co., of Brooklyn, N. Y., previously mentioned in AVIATION.)

DH50 Commercial Airplane

Neither the French nor the Italians exhibited new aircraft, and the same remark applies in a large degree to the British exhibit. The most interesting of the British machines was the DH50, a tractor biplane of typical DH'y looks, which has been designed in the light of experience of the daHaviland Hire Service to replace the well-known DH9C, hitherto used. The DH50 carries four passengers in two sets of side-by-side seats in an enclosed cabin under the center section of the wing. The pilot is seated in an open cockpit behind the cabin. The engine, a Siddeley "Puma" of 240 hp., is fitted with long exhaust pipes which form an effective silencer. The passenger seats can be removed and the cabin space can thus be used for storing freight of from 900 to 1000 lb. It is interesting to note that the DeHaviland Co. proposes to operate this ship at the same price as that originally charged for the three-seater DH9C, that is, 2 shillings per machine mile, or about 12 cents per passenger mile. The range of flight of the DH50 is 300 mi.

The other British planes exhibited included the Avro "Aldershot" (1000 hp. Cub) Bomber, the Armstrong-Whitworth "Siskin" fighter, the Fairy 3D observation aeroplane, the Handley-Page "Hanley" slotted wing machine, the Gloucestershire "Grebe" racer, the new Bristol fighter with the 400 hp. Jupiter radial engine, the Vickers "Viking" amphibian and the DH37 three seater touring plane. The latter arrived by air, as did the DH50.

The following are the chief characteristics of the new Bristol fighter: Span, 12 m., overall length, 7.62 m., height, 3 m., weight, empty, 843 kg., weight, loaded, 1519 kg., speed near the ground, 214 km./hr., speed at 6000 m., 169 km./hr.; climb to 6000 m. in 27½ min.

The French had on show a Bréguet 19A2 sesquiplane, which type won the Spanish military competition for observation type planes, a Breguet 14A2, a Farman F70, a Caudron tourist planes, and an Lee H13, twin-engined flying boat of the type used on the trans Mediterranean air services. Most of these machines had been shown at the last Paris "Salon." The French also exhibited methods of testing aircraft and engine materials, illustrations of manufacturing processes and photographs of various French air lines, which attracted much interest.

In the Italian section there was only a Savoia S16 flying boat equipped with a 300 hp. Fiat engine, which type is used both for bombing and reconnaissance and for passenger carrying.

The German Exhibit

The German stand was one of the few which showed really new machines. The Caspar Werke showed the U1 submarine scout plane, one of which was purchased some time ago by the U. S. Navy, and two interesting cantilever monoplanes for commercial purposes, which are similar in design. One of these, the CLE11, is a three-seater sport monoplane, and looks somewhat like a plywood edition of the Dornier "Komet." The fuselage, undercarriage, wing and tail unit are all of plywood construction. There are no curves in the fuselage, every surface being made flat for simplicity of construction, as a result of which the fuselage looks like a prism. The engine is an 80 hp., 7-cyl. air-cooled Siemens-Halske, which gives the machine a speed of 101 mi./hr. The flying range, with pilot, two passengers and 110 lb. baggage is 490 mi. The span is 39 ft. 5 in., the length 21 ft. 10 in. and the height 7 ft. 2 in.

The CLE12, a larger edition of the above type, carries a useful load of 2905 lb., including pilot and nine passengers, and has a range of 560 mi. This ship is equipped with a 260 hp. Maybach engine and measures 65 ft. 7 in. in span and 37 ft. in overall length.

A new three-seater cantilever monoplane flying boat, fitted with a 50 hp. Siemens engine, was shown by the Nordiflugwerke of Tetow, which was chiefly noteworthy for its wing tip ailerons. The Dornier Co. exhibited the "Delphin" and "Libelle" flying boats, which are well known to our readers.

The Junkers Co. showed its well known 5-passenger low-wing cabin monoplane, which is known in Germany as type J13 or type F, while in this country it was designated as J13—a type K 2-pass. high wing monoplane, fitted with a 70 hp. Siemens-Halske radial engine, which has been described in AVIATION, and a new two-seater training plane, type T. The latter is probably the ugliest machine ever produced, even in Germany, where beauty of line seems to be generally disregarded. This ship is a parasol monoplane, with one large open cockpit below the wing. The wing is braced to the fuselage by a structure of steel tubes, which gives good visibility toward the ground. The most novel feature of this ship is the power plant, which consists of a 70 hp. Junkers vertical 6-cyl. air-cooled engine. The cylinders are said to be built on the lines of the air cooled Chevrolet automobile engine, each cylinder being fitted with U-shaped vertical copper fins, the open ends of which abut against the cylinder walls. On the back of the propeller boss is a circular plate, fitted with air scoops, through which the air is driven via an airduct around the cylinders. Constructionally, this machine follows the well known Junkers practice. The span is 13 m.; length, 7.5 m., useful load, 350 kg., and the speed 145 km./hr.

Various small German sport planes were also exhibited, such as the Udet low-wing cantilever monoplane, fitted with a 50 hp. Siemens engine, and the Dietrich biplane with a 70 hp. Gnoome engine, which was an old design, and the Stahlwerke Mark model R3 single-seater sport plane, fitted with a 30 hp. Haacke engine. This machine was known before as the Rieseler plane.

New Fokker Pursuit Plane

The Dutch aircraft industry was well represented by the Netherlands Aircraft Works, which exhibited two complete machines, a Fokker C4 and a new pursuit biplane, known as D11, and also an all-metal hull for an FB11 seaplane.

The C4 is a Liberty-engined two-seater observation machine, which is well known in this country, the Army Air Service having purchased half a dozen ships of this type. The D11 is a "sesquiplane," with tapering wings and overhanging ailerons, the wings being of the habitual Fokker type veneer construction, while the fuselage is of welded steel tubing. Although constructionally the D11 follows usual Fokker practice, the lines of the ship are much more graceful than the previous products of this constructor. The nose of the ship, which carries a 300 hp. Hispano-Suiza engine, is well streamlined and the V type interplane struts add to the looks of the machine. The following are the main characteristics of the D11: Span, 11.5 m.; length, 11.5 m., weight, loaded, 1250 kg.; useful load, 250 to 400 kg.; speed, 240 to 260 km./hr., climb to 5000 m. in 12 min.

The Fokker FB11 all-metal hull is destined for a three-seater observation tractor flying boat which will have a swept back top plane and a straight and narrow bottom plane, somewhat in the manner made famous by various post-war Short airplanes. The engine is a Rolls-Royce "Eagle" 370 hp., with Lonhlin radiators. The pilot's cockpit seats two men side by side and an observer is seated in a separate cockpit aft, with a gun ring. The ship has been built for service in the Dutch East Indies.

Swedish aircraft appeared for the first time at an international exposition in Gothenburg. The Swedish army exhibited three machines, one, a small training biplane fitted with a 90 hp. Thulin rotary engine; the second, a type S21 two seater observation biplane of the Phoenix-Brandenburg type, fitted with a 260 hp. Maybach engine; and third, a type J23 parasol monoplane designed by the German engineer, Heinkel. The last-named ship is of all-wood construction and is chiefly notable for double-tapering wings, like the Morane parasol and the Bristol "Bullfinch." That is, the wings are thickest at the point of attachment of the rigid struts and taper both to the tips and the center. The Svenska Aero A.B. of Stockholm, the only private Swedish aircraft firm, exhibited a Brandenburg type Caspar S1 seaplane, which was built in Germany.

Interesting Czechoslovak Planes

Some very interesting machines were shown in the Czechoslovak exhibit. These included an Aero A10 commercial seven-seater cabin plane, which has been described in AVIATION, an Aero A18 pursuit plane, and a Smolik model S6 two-seater fighter with 260 hp. Maybach engine, which was built at the Military Aircraft Works, at Prague. The latter machine is particularly interesting on account of its wing structure, which is of semi-cantilever type, the single pair of interplane struts being placed about half way along the span, leaving very long overhangs. The lower plane is of much smaller span than the top one, both wings being of the thick, high-lift section of the Joukovsky type. The characteristics of this machine are: Span, 42 ft. 9 in., length, 28 ft. 3 in.; weight, empty, 2420 lb., weight, loaded, 3960 lb.; speed, 108 mi./hr., range, 745 mi., ceiling, 21,000 ft. This ship, as well as the Aero 10, both flew to Gothenburg from Prague, which they covered in about 7 hr. flying time.

The Aero A18 pursuit plane is a normal single bay biplane, with a smaller bottom wing. The fuselage is of welded steel tube construction with fabric cover. The engine is a 185 hp. BMW IV. The characteristics are: Span, 24 ft. 11 in., length, 21 ft., wing area, 170 sq. ft., weight, empty, 1390 lb., weight, loaded 1940 lb., high speed, 150 mi./hr. Considering the small horsepower of the power plant, this machine has a very good performance.

Flying Competitions

During the Gothenburg Exposition various flying competitions and tournaments were held.

First there was a so-called arrival competition which was open to all machines other than those of government property. Two stops were to start from Rotterdam at appointed times and fly to Gothenburg with stops at Bremen and Copenhagen for land machines, and at Norderney and Copenhagen for seaplanes, so as to arrive at Gothenburg between 4 and 8 p. m. The method of computing the points consisted in calculating the speeds of the competitors on each stage of the flight and multiplying the greatest of those average speeds by the whole of the flying time less 2 hr. neutralized for the compulsory stops in the intermediate flying fields. From this figure was deducted the distance flown in kilometers, the remaining figure being counted as faults. Additional faults were added for intermediate landing, delays in starting, etc. and the competitor scored all the least number of faults was adjudged the winner. This competition was won by the Swedish army pilot Lieut. N. Söderberg, flying a Swedish civil Bréguet 14A2 biplane. Second was B. Grasé, Chief Engineer of the Netherlands Aircraft Works, on a Fokker C4, with 450 hp. Napier "Lion" engine; third, R. Thedemann on a 200 hp. BMW Junkers seaplane; fourth, A. J. Cobham with three passengers on the DH50; fifth, Pilot Zimmermann on a Junkers F cabin plane; sixth, Maj. H. Hemming, with two passengers, on a DH37, with 450 hp. Rolls-Royce Falcon engine; seventh, Flight Officer Bird, on the Gloucester Grebe, with 380 hp. Jaguar engine; and eighth, Lieut. E. Kjellgren, of the Swedish army, on a Swedish "Tunnelisa" biplane, with 90 hp. Thulin rotary engine.

This event was followed by a commercial passenger carrying competition. Contestants had to arrive at Gothenburg on Aug. 4, between 4 and 8 p. m., the prizes being awarded on the basis of distance, governed by the number of miles flown from any place distant more than 200 km. This event was won by Pilot Cobham on the DH50.

In the flying exhibition open to government machines, squadrons of British, Danish, Dutch, French, and Swedish land machines and seaplanes participated. The Dutch formation included Fokker D7 pursuit planes, while the Swedish Air Service was represented by Phoenix pursuit machines and Brandenburg seaplanes. The Phoenix is an Austrian wartime design which has since been reproduced in Sweden. Various other competitions for bombing, tourist planes and height also took place.

Aerial Golf

Photo Kadel & Herbert

This novel game was introduced at a recent aerial outing of the Aero Club of France. The contestants flew over a special "putting green," holing in flight. Above are shown the results.

New French Flying Boat

The Latham Co. of France has produced a new type of flying boat which is chiefly notable for having an all metal hull. The hull, built of duraluman framing and sheeting, was produced by the torpedo works of Normand at Le Havre. The trials of this machine are said to have been very satisfactory, a great rigidity having been obtained with the metal hull, while the weight is essentially the same as that of a wooden hull.

Following are the principal characteristics of the flying boat, which is otherwise of normal biplane construction: Span, 14.50 m.; length, 11.90 m., wing area, 60 sq. m., engine, 300 hp. Renault; radiators, Lamblin; weight, empty, 1650 kg., in which the hull figures as 412 kg., weight loaded, 2500 kg., including 4 hr. fuel and 600 kg. pay load, max. speed, 160 kg./hr., take-off, 30 sec.

AIRPORTS AND AIRWAYS

This Department is concerned with all civil flying activities such as the establishment of airports, the marking of airways, warnings to airmen regarding obstructions, experiences gathered on flying routes and landing fields, the work of commercial aviation companies and private fliers, the formation of new air transport enterprises, personal paragraphs of general interest, etc

Communications to this effect, addressed "Airways Editor, Aviation, 225 Fourth Ave., New York City", should be brief, accurate and to the point. They should deal with facts, not with theories or speculations. While American civil flying activities will naturally be given prominence, communications will also be welcomed from Canada, Mexico and other parts of the Western Hemisphere. EDITOR.

A Strong Resolution

The Aviation Club of Chicago at its regular meeting held Aug 31, adopted the following resolution

"Whereas, numerous reports of proposals to limit aircraft construction, said by the daily press to have been made to the United States Government, call for an expression from recognized aviation organizations

"Therefore, the Aviation Club of Chicago, after due discussion, has

"Resolved, that it believes the present position of the United States among the nations of the world, with its accumulated riches and valuable natural resources, together with its culture and form of government, imperatively requires that it protect itself against any possibility of attack or infringement upon its rights and duties and that to guarantee its freedom and effectiveness the United States should not enter into any agreement, treaty or understanding with any nation which would in any form or manner operate to limit aircraft development, construction or armament; and the Aviation Club of Chicago further

"Resolves, that the present administration of the Government of the United States be requested to immediately, or as soon as practicable, begin an active aircraft construction program, designed to make the United States air forces the strongest in existence, and to maintain them in this superior position, for all future time, such air force to consist of not less than five thousand machines of all required types, including scouts, bombers, flying tanks, gassing machines, trench cleaners, observation and fighting machines, seaplanes, aircraft carriers and auxiliaries, and all necessary equipment, including air stations and landing fields, supply and repair depots, etc.,

"And, it is further resolved, that in connection with the afore mentioned program, that a movement be started without delay for obtaining by the United States a series of outer air bases, at such strategic points as may be determined upon, and that among them be the point of land in the Arctic ocean known as Wrangell Island, which is by right of property belonging to the United States and that said Wrangell Island be occupied at once and an air base be located thereon.

"Copies of the above resolutions be sent to President Coolidge and each Illinois senator and representative from Chicago district."

New Air Line in Mexico

According to El Universal of Mexico City, Aug 14, a contract providing for passenger and freight service by airplane has been signed by the Minister of War with the representative of the Aerial Navigation Co of Mexico. This company is allied with the Aerial Navigation Co of Columbia, (Scadta), which has been operating a mail and passenger service between Cartagena and Bogota for the past two years.

The new Mexican company hopes to establish service between Vera Cruz and Progreso during the present month, using Junkar machines and German pilots. The next route to be opened will be from Guadalajara to Mazatlan.

Chicago News

Nimmo Black arrived first from New York in Chicago with news photos of the Dempsey Firpo fight. Black left New York at 6 a. m. tha Saturday after the fight and arrived at Checkerboard field at 4 p. m. tha same day. He flew without stop to Hammond, Ind., where his gasoline supply gave out, delaying him about an hour. Immediately after delivering the pictures in Chicago he took off and proceeded westward, headed for the Coast. It will be interesting to learn how his old reliable OX5 takes to mountain climbing.

Shortly after Black's arrival Bert Acosta and LeRoy Thompson arrived at Ashburn Field in a Fokker C2 cabin biplane. Two Orioles, piloted by Wesley L. Smith and Jim Ray, also arrived with flight pictures, and proceeded later to Omaha.

Jimmy Curran flew to tha fight with two passengers, using a "Hisso" Standard.

Pilot Schueler, in company with a friend, left Ashburn Field Sept. 15, to spend the week-end at Cedar Lake, Ill. They are using a JND4.

Frank Knox has sold his Hall-Scott motored Standard. The ship is now flying at Black's field.

Airplanes at the Police Games

The Field Days held by the Police Department of New York City at the race track of Jamaica, L. I. on Sept 15 were marked by an exhibition of a dozen airplanes which were representative of tha Garden City flying fields.

Mitchel Field sent over half a dozen Army DH4B's, the Air Mail two mail ships flown by Pilots C. E. Johnson and Amee, the Curtiss Exhibition Co three Orioles flown in formation by Pilots C. S. Jones, MacMullen and Sharpe, and the Skywriting Corp. of America an SE5. None of these ships landed at the Jamaica race track as the pilots did not like its looks. A Police Reserva plane piloted by Dr. Leo Greenbaum, with Mechanic John Walden, however, attempted to land on the race track and crashed. The mechanic suffered a broken nose and internal injuries, but is expected to recover. Tha pilot was uninjured.

Kansas City News

On Saturday Sept. 8 there was a meeting of the Reserve Officers of the Air Service at the University Club in Kansas City to hear Maj. H. A. Dargue, A.S., talk on the Air Service, its organization and relation to the organized reserves. This was followed by a short talk by Lt. J. B. Carroll on local military aviation and what tha reserve officers can do to promote aviation in Kansas City.

There was a good turn out and the pep and enthusiasm were so great that it was decided to hold these meetings every Saturday at 1 p. m. at the club. These meetings will be followed by a trip to the field where there will be flying till 5 p. m. From now on flying for reserve officers at the field will be on Wednesday from 1 to 5 p. m., Saturdays, 2 to 5 p. m. and Sundays from 9 to 12 a. m. and 1 to 5 p. m.

French Parachute Competition

Some interesting particulars are now on hand regarding the parachute competition held last spring in France, which the Nieuport-Astra Co. endowed with 15,000 francs of prizes. The purpose of the competition was to produce a type of parachute which would combine the features of light weight, safety, rapidity of opening, minimum effort of opening and low sinking speed. Prizes were awarded on points given for each particular item.

Seven contestants entered this competition, as follows:

Cormier parachute—Surface area, 40 sq m., cotton fabric; weight 9 kg. Spherical shape, equipped with 16 shrond lines. Pack type, with accordion holding and leather guides to prevent the entangling of the shroud lines.

Jacquier parachutic—Surfara area, 45 sq. m., spherical shape, cotton fabric, 20 shroud lines. Garnerin type opening ring.

Heriture parachute—Surface area, 62 sq. m.; square shape, with 9 shroud lines attached to the sides and center of the hood. An auxiliary parachute insures the opening of the pack and of the main parachute.

Ory parachute—Spherical shape, of cotton fabric, with 16 shroud lines. The opening of this parachute is insured by a number of willow rings, which form a kind of chimney and force the air into the parachute.

Robert parachute—Flat parachute of cotton fabric, with 8 main shroud lines, each of which is attached to the fabric by means of a 3-branch crows foot.

Tissandier parachute—Flat parachute of 52 sq m. surface area with 16 shroud lines.

Secat parachute—Spherical shape parachute of cotton fabric with 22 shroud lines and a central handling line. Accordion type folding.

These parachutes had to satisfy tha following requirements of the elimination trials, namely: maximum volume of 25 cu. dm., max weight of 7 kg., min. surface area of 30 sq m.; and min resistance of the fabric to a weight of 300 kg. Tha parachutes were tested by being launched from a captive balloon at a height of 500 m., being weighted by a dummy of 80 kg. weight. The results obtained were as follows:

Time of opening—Min., 1.9 sec. (Froidure), max., 4.8 sec. (Blanquier and Secat). The Tissonnier parachute, having failed to open at the first launching, was eliminated.

Sinking speed—Min., 4.6 m/sec. (Ors); max., 7.30 m/sec. (Cormier). The first named of these parachutes alone has been deemed to fulfill this requirement, although its opening time is somewhat longer than that of the Froidure.

Opening effort—This effort should not exceed four or five times the weight of the parachutist and the rules of the competition therefore, limited it to 300 kg. However, tha figure was largely exceeded in the Cormier and tha Froidure parachutes with 475 kg. and 560 kg. respectively. Tha safety factor was shown to be 2 for tha Blanquier, 4 for the Cormier and 5.25 for tha Secat. The Robert parachute appeared the sturdiest and best-constructed of all, having a safety factor of over 13. The principal weakness of most of the parachutes entered appeared to be in the fixing of tha shrond lines to tha fabric.

Although none of the competing models entirely fulfilled the requirements of tha competition, the jury awarded first prize to the Ors parachute, second prize to tha Robert parachute and third prize to the Secat parachute. The conclusions drawn from this competition seem to be that although much progress has been made in producing safe and reliable parachutes for airplane use—which was the main purpose of this competition—much remains still to be done before this lifesaver can be currently used on heavier-than-air craft. Another parachute competition will be held in France in 1924.

New Air Line in Colombia

An expansion of air transport activities is reported from the Republic of Colombia, where tha SCADTA operates, as our readers know, a regular service up tha Magdalena River from Cartagena-Barranquilla-Giradot-Neiva. The new air line, known as the Compania Santanderana de Aviacion (Cosda), will operate a feeder line to the above-named service from Bucaramanga to Barranca-Bermeja. This service will be operated with Dornier "Komet" cabin planes.

New German Aircraft Engines

Several new German aircraft engines have recently been produced in Germany. Among these are a 25 hp 2-cyl. horizontal opposed air-cooled engine manufactured by tha Haseke company, which is chiefly used on small sport planes, such as the Rieseler R3, tha Udet monoplane and tha Eutler two-seater biplane. The Haseke firm is now experimenting with a 3-cyl air-cooled engine of 40 hp which uses the same type of cylinders as the 2-cyl type.

The Siemens & Halske Co of Berlin also produces radial air-cooled engines. So far two models have been produced, one a 5-cyl 50 hp type, and the other a 7-cyl 80 hp type. The 50 hp. type is used on the Dornier Libelle three-seater flying boat and on the three-seater Junkers monoplane, while tha 80 hp. type has also been mounted in tha Libelle. This firm is now experimenting with 3-cyl and 9-cyl air-cooled engines of the same type, which will have interchangeable cylinders, pistons and connecting rods with the 50 and 80 hp types.

The B.M.W. Co. has brought out a new, somewhat smaller, model of its well-known 6-cyl vertical engine, which has the following characteristics: Normal hp. at 1300 r.p.m., 120 hp.; max. hp. at 1400 r.p.m., 140 hp.; bore, 120 mm.; stroke, 120 mm.; weight, dry, 210 kg.; fuel consumption, 225 g./hp./hr. This engine is known as type 2.

The B.M.W. Co. has also built an experimental 6-cyl engine, known as type 4, which develops 240 hp. at a normal speed of 1300 r.p.m., and 260 hp. at a maximum speed of 1400 r.p.m. The bore is 160 mm. and the stroke 190 mm. The normal fuel consumption is 195 g./hp./hr., but on bench test the engine has turned 22 min. at 1320 r.p.m., with a fuel consumption of only 170 g./hp./hr. Inasmuch as this engine is of the military super-compressed type, which the Versailles Treaty prohibits Germany from building, it will not be produced in Germany but in some foreign country.

Italian Helicopter Competition

The Italian Air Department has invited Italian aircraft manufacturers to submit proposals for the construction of tha helicopter in accordance with the following specifications:

Total weight, 1000 kg., including 150 kg. useful load; power plant to consist of a 220 hp. semi-compressed Spa motor, driving not more than four propellers, which should preferably not be mounted on the same shaft. The propellers must be of wood, have a maximum diameter of 7 m. and rotate at a speed not exceeding 700 r.p.m. The car of the helicopter must be placed outside the slipstream of the propellers. The control organs should be independent of the lifting screws, but can be constituted by auxiliary propellers. Horizontal maneuvering may be effected by rudders. The climb must not be less than 6 m./sec. and the horizontal speed at least 40 km./hr. The latter performance will be controlled by means of two horizontal flights of 200 m. length. The machine must be capable of covering a closed circuit of 2 km. at a minimum height of 5 m., carry fuel for at least 1 hr. flight and land at a maximum rate of speed of 10 m./sec. The installation of a parachute for use by the pilot is obligatory.

The Air Department will pay the sum of 250,000 lire to tha first helicopter fulfilling these conditions. One-half of this sum will be paid as soon as the machine has proved itself capable of rising from the ground, provided it answers all other weight requirements.

French Air Mail Rates

A postal package weighing 3 kg. and sent by railway mail from Paris to London, costs a fraction over 6 francs and requires 36 hr. in delivery. By plane it costs 9 francs and is delivered in 6 hr. For Amsterdam a package of 1 kilo by rail costs 3.40 francs, and takes 30 hr., by plane it costs 5.50 francs and is delivered in 7 hr.

New Aviation Convention

An air convention between France and Czechoslovakia has recently been concluded. It accords special privileges to both nations in regard to exchange of personnel and purchase of material, and apparently excludes Germany from Czechoslovakia in the field of aviation.

U. S. ARMY AND NAVY AIR FORCES

U. S. ARMY AIR SERVICE

National Guard Squadron Efficient

The Air Service, National Guard of the 38th Division, consisting of the 113th Observation Squadron, together with its Photographic Section and Intelligence Section recently completed a tour of duty at Wilbur Wright Field, Fairfield, Ohio. This squadron comes from Kokomo, Ind., and has a commissioned personnel of 24 officers and an enlisted strength of approximately 156, and reported at Wilbur Wright Field nearly at full strength, in command of Major Patton of Kokomo, Captain Donnally of the Air Service being the officer assigned to duty with them.

The degree of excellence developed in this organization has been a revelation to the officers of Wilbur Wright Field, demonstrating the care and labor of the commissioned personnel in its development. They arrived for duty with a minimum of disturbance, assumed the quarters assigned to them and opened up for business in a manner equal to that of any veteran organization. They carried on the two weeks of training and instruction under their own officers, accepting assistance from the regular personnel of Wilbur Wright Field in the way of instruction only in developments of a character so recent as to be furnished only by the Regular Army officers.

When they broke camp, part of them returned to Kokomo by airplane, part by train and the balance by truck, their departure being marked by the same efficiency displayed at their arrival and the general conduct of their affairs while at the field.

In respect to the memory of the late President, all social activities were suspended, with the exception of a luncheon given on the concluding Saturday of the encampment by the officers of Wilbur Wright Field to the Officers of the National Guard Squadron, where mutual expressions of esteem were exchanged, the local officers complimenting the visitors on the excellence of their outfit and the visiting officers complimenting the local officers with their expressions of a keen desire to return to Wilbur Wright Field for duty next year.

Air Service Progress in Hawaii

Wheeler Field, Schofield Barracks, H. T., has been greatly improved during the last three months in many respects. The landing field, basically equipped by Mother Nature for the purpose, has been mowed and burnt. Immediately following the burning, nature again generously supplied an unusual amount of rain during the generally dry months of June and July, with the result that the airdrome is now a beautiful, smooth, green expanse. Wheeler Field is by far the best landing field yet established in the Territory of Hawaii and is second to none in size on the mainland.

The five Bessonneau Hangars (original equipment of Wheeler Field) having become useless and worn out, have been removed. All small temporary buildings that were promiscuously spotted about the premises have either been disposed of or re-enforced, painted and replaced in orderly fashion.

Construction on the field has steadily progressed, resulting in many necessary conveniences not heretofore enjoyed. The four small steel hangars now being erected by troop labor are rapidly nearing completion. The large capacity gasoline and oil storage tanks situated along the western extremity of the field have been completed by the contractors and will be ready for use shortly.

Material has been received and plans for the construction of several concrete warming up blocks and an aerial target range have been approved. This work will be undertaken by the personnel of the field upon completion of the rush work now being done on the War Reserve Storage Hangar.

Kelly Field Pilots Give Aerial Demonstration

An aerial demonstration, consisting of practically every phase of aerial attack, demolition, etc., was given before the Regular Army, National Guard, Reserve officers and a large gathering of San Antonians at Camp Bullis, July 18, by members of the 3rd Attack and the 10th School Group, of Kelly Field.

The maneuver consisted of an offensive movement against outlined enemy positions, and was participated in by practically every type of modern arms. "H" hour found the attacking planes from the 3ed Group "on the job", and after their first attack the target, consisting of a strip of white cloth, was completely blown to bits. Fifty-pound demolition bombs, as well as front and turrell guns were used, and the nine planes constituting the formation completely obliterated the target in less than ten minutes. The ground troops immediately started their advance, and by 3 27 the "enemy" had been thoroughly demoralized, driven from its position and the battle won.

All types of problems were flown, including Infantry contact, Artillery adjustment, surveillance, bombing, attack, etc., the problems being directed and handled by Brig. Gen. Paul B. Malone, Commanding the 2nd Field Artillery Brigade at Camp Travis, Tex.

War College Students Visit Aberdeen

Students of the War College recently visited the Aberdeen Proving Grounds, Md., for the purpose of observing the proof work being carried on. Four demonstrations were given by the 49th Squadron, entailing the dropping of two 600 lb. bombs, one instantaneous and one delay detonation on water. Demonstration of aerial gunnery by the shooting down of small meteorological balloons by machine gun from the rear seat of a DH4B and the dropping of six 600 lb. bombs in salvo from a formation of three NBS1 airplanes was also given. As a concluding demonstration a night flight was made for the discharge of flares from a DH4B at an altitude of 6000 ft.

Duration Record for the Hawaiian Islands

Lieut. Ned Schram, stationed at Luke Field recently set up a new duration record for a Martin Bomber in the Hawaiian Islands, when he remained in the air 9 hr. He took off at 5 15 a. m. and landed at 5 15 p. m., the last two hours being flown at reduced throttle (1100 r p m.).

Martin Bombers are used quite frequently on regular interisland flights to Maui and Molokai, 65 and 110 miles distant, respectively, from Luke Field. These trips involve a flight across channel of 42 miles.

Aerial Mail Service in Hawaii

A daily aerial mail service between Wheeler Field and the several units of the Hawaiian Division encamped around the coast of Oahu has been established with excellent results. Not a day has been missed nor a letter or package lost.

This feature was inaugurated on July 14 last and will be continued as long as the regiments stay in the field. By this system several days' time is saved in the transmission of both official and social correspondence.

Reserve Officers Complete Training

Four reserve officers completed their fifteen-day tour of active duty at Scott Field on July 31, viz: First Lieut. Guy R. Oatman and 2nd Lieuts. Joseph L. Adams, John L. Rogers and Harry C. Schall. Lectures in aerostatics, aerodynamics, aerial navigation and organization of the Air Service and Organized Reserves were given daily. The students made numerous free balloon flights and were also given instruction in airships.

Enlisted Men Perform Heroic Feat

The prompt initiative, exceptional courage and personal disregard of self which three enlisted men of the Air Service exhibited in removing a burning airplane from the 5th Observation Squadron hangar at Mitchel Field, L. I., N. Y., recently, was the occasion of the issuance of General Orders by Maj. Robert L. Bullard, commanding the 2nd Corps Area, commending Master Sergt. Cecil L. Kitheffer, Tech. Sgt. Hawkins Crowder and Private, 1st Class, Willard Kiene, for their conduct in resolutely meeting such a hazardous situation and in preventing heavy loss in government property and equipment. The order states that the conduct of these men reflects great credit not only upon themselves but upon the entire army and indicates a spirit of self-sacrifice that deserves the highest commendation and is worthy of emulation by the entire personnel of the Army.

It appears that at about 6 00 p. m. of that day an airplane in the 5th Observation Squadron hangar caught fire when the air lianes working on the engine accidentally broke a drop light. In spite of the grave danger of the gas tanks exploding and the strong resultant possibility that the other six airplanes, the hangar and the nearby portion of the camp might be partially or wholly destroyed, these three soldiers in jeopardy of their lives and health quickly and courageously removed the flaming airplane from the hangar, closed the hangar door and continued to work upon the burning airplane until the flames were extinguished.

U. S. NAVAL AVIATION

Success of the Airship ZR1

Secretary of the Navy Denby, commenting on the recent test flight of the naval airship ZR1 paid high tribute to the excellent performance of the big rigid and to the naval officers who were responsible for her design, construction and operation. He said:

The ZR1 is an American success which reflects the determination of naval officials to develop the rigid airship as an American product. The ZR1 was designed in the Navy Department, under the Bureau of Aeronautics, fabricated by the Naval Aircraft Factory and erected at the Naval Air Station in Lakehurst, N. J., under the supervision of officers of the Corps of Naval Constructors, and is now being flown by her regular naval crew.

"The development of the rigid airship as a fleet scout for long distance reconnaissance at sea is in line with the policy of the Navy Department to keep abreast of every modern, up-to-date trend of national defense. If the rigid airship is necessary as an auxiliary to a modernized fleet the Navy purposes to know all about the capabilities and possibilities of this type of aircraft, just as it is developing the possibilities of the aircraft carrier, the torpedo plane and the bomber.

"The ZR1 will upon the completion of her trials be incorporated into the naval organization afloat. She will have an active part in fleet maneuvers as a long distance air scout, operating under the direction of the commander-in-chief. And her usefulness will be fully determined.

"In connection with these trial flights, it is of especial interest to note that the Navy Department in Washington was in constant communication with the ZR1 by radio. Her position was accurately reported at frequent intervals to the Department and full information given of operating conditions on board. This illustrates one of her uses as a naval air scout.

"One of the most gratifying features of her trials to date is the fact that this, the first rigid airship built in this country, has been taken from her shed and operated with a record for perfect performance, without the necessity for any changes or alterations in her original design. The Navy has entered the field of a new industry and trials of the ZR1 to date indicate that she has been built wisely and well. Aside from her naval value, she is a pioneer for commercial aeronautics in this country."

Rear Admiral William A. Moffett, Chief of the Bureau of Aeronautics of the Navy Department, made the following comment relative to the trial flights of the ZR1:

"The success of the ship to date is a triumph for American industry, not only for her designers, but for the manufacturers of her fabric, engines, and duralumin, for the workmen, Naval Aircraft Factory, and the Naval Air Station, Lakehurst, N. J.

"Last February the Navy Department announced in a radio broadcast that the ZR1, upon completion, would make flights to the principal cities of the East, and later, more extended flights, and then, if practicable, a flight to the North Pole. The first part of this program has been carried out, and the rest of it will be in time—it is hoped by next spring.

"She will not only be employed as a Naval scout, but data will be kept to prove whether rigid airships can be made a commercial success. She will be used for voyages to other parts of the world, heretofore inaccessible, for exploration and discovery. We hope we are at the beginning of a new era of transportation and communication. If handled carefully, all precautions taken, no unnecessary risks run, and the personnel thoroughly trained in airmanship, I have no doubt whatever of the success of this great venture, and that rigid airships will be shown to be practicable as a new means of transportation. Nothing will be left undone to ensure success."

Reserve Station at Fort Hamilton

The Naval Reserve Air Station at Fort Hamilton, Brooklyn, N. Y., has been very active in their work of training Naval Reserve Aviators. Such stations as Fort Hamilton Air Station offer an easy, interesting and thoroughly up-to-date way in which men in civil life can learn the art of flying under expert instruction without devoting all year round work to aviation. The training of naval reserve aviators is of the greatest importance to the country, creating a reserve of trained pilots who in time of war will be able to step into the breach and render invaluable aid to the Navy.

During the week ending Sept. 8 the station had 18 hr. 47 min. flying time. This is a very good figure, considering that the air station is not a large establishment, only seventeen men being under flight training with but a handful of planes.

Navy Doctors Watch Condition of Fliers

A daily medical inspection to determine the fitness of student naval aviators for flying duties has been instituted at the Naval Air Station at Pensacola, Fla. One medical officer has been assigned to every flying beach at the station, to inspect the men at morning muster. By this means any physical or psychological variations in the fliers, which might be considered minor by the men can be detected at the start. No pilot is permitted to fly who is not in good health. This precaution will do much to eliminate all dangers that might arise to the aviators through their own condition.

Naval Air Station, San Diego

The Naval Air Station at San Diego, Calif., gave a smoker on Srpt. 12 to the League of California Municipalities which met at Coronado, Calif., during the week of Sept. 10. A number of bettles between boxers from the Naval Air Station will be a feature of the program given in honor of the League members.

COMING AERONAUTICAL EVENTS

DOMESTIC

Oct. 1-3 — National Airplane Races, St. Louis, Mo.
Late Fall — Curtiss Manna Flying Trophy Race

FOREIGN

Sept. 28 — Schneider Maritime Aviation Trophy Race, Cowes, Isle of Wight, England
Oct. 14 — Baumont Cup Race, Istres, France
Dec. 1 — Entries close for French Engine competition

Orders to Officers

Lieut George R Fairlamb, detached Naval Air Station, Pensacola, to Naval Air Station, Coco Solo, C Z

Lieut Frank N Sayre, detached Naval Air Station, Pensacola, to conn. f o U S S. S41 and on board when commissioned.

Lieut Junius L. Cotten, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet.

Lieut Arthur B Craig, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet.

Lieut Raymond E Farnsworth, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut Charles G Hultgren, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet.

Lieut Osborn B Hardison, detached Naval Air Station, Pensacola, to Aircraft Squadrons, Scouting Fleet

Lieut Charles L Hayden, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut Conrad A Kreer, detached Naval Air Station, Pensacola, to Aircraft Squadrons Scouting Fleet

Lieut Walther G. Muser, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut Douglas A Pawell detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut (jg) Edgar L. Adams, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut (jg) Horton I Booker, detached Naval Air Station, Pensacola, to Aircraft Squadrons Scouting Fleet

Lieut (jg) Harold F Fick, detached Naval Air Station, Pensacola, to Aircraft Squadrons Scouting Fleet

Lieut (jg) Charles M Huntington, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut (jg) John Perry, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut (jg) Frederick W Roberts, detached Naval Air Station, Pensacola, to Aircraft Squadrons Scouting Fleet

Lieut (jg) Walton W Smith, detached Naval Air Station, Pensacola, to Aircraft Squadrons Scouting Fleet

Lieut (jg) Morton B Sterling, detached Naval Air Station Pensacola, to Aircraft Squadrons Battle Fleet

Lieut (jg) Burnett T Talbot, detached Naval Air Station, Pensacola to Aircraft Squadrons Scouting Fleet

Lieut (jg) Jackson R. Tutt, detached Naval Air Station, Pensacola to Aircraft Squadrons Scouting Fleet

Lieut (jg) John F. Wentworth, detached Naval Air Station, Pensacola, to Aircraft Squadrons Battle Fleet

Lieut Ralph C Petmecky, detached Office of Naval Inspector of Aircraft, Friedrichshafen, Germany, to Naval Air Station, Lakehurst, N J

Lieut William D Sample, detached Naval Air Station Pensacola to Aircraft Squadrons Scouting Fleet

Ch Carp William H Squire, detached Naval Base, San Diego, Calif., to Naval Air Station, San Diego, Calif.

Marine Corps Planes to Fly from Haiti

Two U S M C planes, piloted respectively by 1st Lieut Ford O Rogers, of Waco, Tex., and Sec. Lieut. Horace D Palmer, of Athens, Ohio, U S M C, took off from Santo Domingo at 9 14 a m Sept 19, en route for St Louis, Mo, which they expect to reach in time for the Air Races. The itinerary of the 2000-mile land and water flight it is expected will be Port-au-Prince, Guantanamo, Havana, Miami, Dayton, Paris Island, S C, Fayetteville N C., Washington, D C, thence westward, stopping at Moundsville, W Va, and Dayton, Ohio to St Louis.

The two new planes, shipped to Haiti for this attempt, will not compete at St. Louis the scheduled flight being in the nature of a Marine Corps test

Squantum Reserve Air Station

The Naval Reserve Air Station at Squantum, Mass, near Boston, has been very busy since it was put into commission on Aug 15. Lieut George R Pond is in command. The people of Boston and the surrounding country have shown a great deal of interest in the station and many visitors have dropped in The interest aroused has done much to educate the people of Massachusetts in the work being done by aviation in the Navy.

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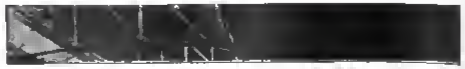

Aviation's Rich Subsidy

IN America aviation now enjoys a subsidy that cannot be bought with money. It comes from foremost members of the industries upon which aviation leans. It is the evidence of these manufacturers' sincere desire to speed the development of aerial transportation and defense.

The help of these eager concerns and individuals enables American "ships" and pilots to keep pace with those of other lands. Some of aviation's friends constantly work to improve metals, some are busy with alloys, woods, fiber compositions, fabrics and other essential materials.

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